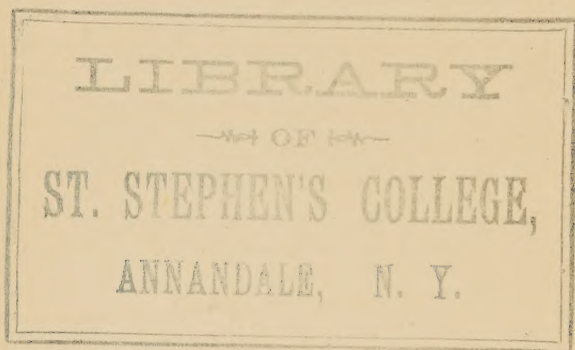


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MAKING GOODS AND MAKING MONEY



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MAKING GOODS
and
MAKING MONEY

BY
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COLUMBIA UNIVERSITY

New York
THE MACMILLAN COMPANY

1928

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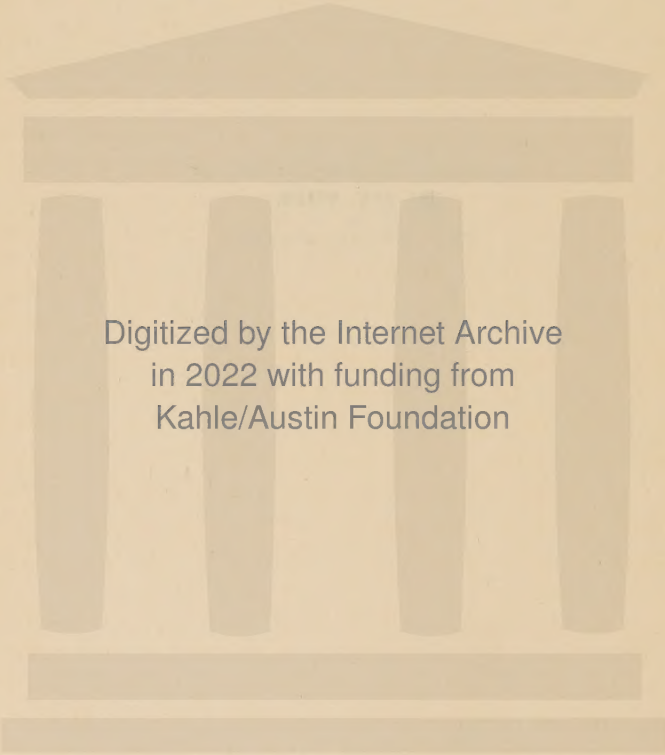
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TO MY WIFE



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PREFACE

THE social purpose of industry is to make goods; the purpose of the individual who engages in industry is to make money. Such, in brief, are the two motives to economic production. Various economists have presented more or less convincing arguments that social and individual interests in production are identical—that making goods and making money are necessarily associated with each other. The opposite thesis—that there is an essential incompatibility between making goods and making money—has been advanced with equal cogency by another group of economists. In the present study my purpose is to apply empirical tests to this problem.

A problem which arises out of cultural circumstances is best studied, it seems to me, in relation to a changing cultural setting. Looked at in this light our interest is chiefly with trends and tendencies, or time processes, rather than with static circumstances or conditions. Hence, in the study which follows we are concerned with whether, as time goes on, it is becoming more or less necessary to make goods in order to make money. The empirical evidences which are brought to bear on this problem are drawn from the field of manufacturing industry. They involve the trends in organization, size, scope, technology, costs, and inter-relationships, of manufacturing enterprises. The conclusion reached is only as broad as the data from which it rises. It is, therefore, an answer to a question which may be precisely stated as follows: As time goes on, is it becoming more or less necessary, in manufacturing industry, to make goods in order to make money?

In the preparation of this study I have been aided to

so great an extent by various friends and co-workers that I am conscious of a complete inadequacy in any words that I may use in acknowledging my debt and expressing my appreciation. To Professor Arthur B. Adams of the University of Oklahoma and Professors Wesley C. Mitchell, Henry R. Seager, Edwin R. A. Seligman, and Vladimir G. Simkhovitch of Columbia University I owe the debt of a student to great teachers. All of these gentlemen have generously taken time from their more important scholarly labors to read portions of the manuscript and have made many helpful suggestions and constructive criticisms. To Professor Mitchell, who read all of the manuscript during the period of its preparation and who gave unstintingly of his time and large knowledge, my obligation and my appreciation are greater than I can express. I am equally indebted to my friend and colleague, Professor Rexford G. Tugwell, who has contributed many hours and much thought and a great deal of inspiration to the work. My original interest in the problem with which this study is concerned has developed to the point where I hazard writing a book about it largely because of the teachings of Professor Mitchell, the writings of Professor Thorstein Veblen, and the comradely like-mindedness of Professor Tugwell. Any virtues the book may possess are due in great part to the gentlemen I have named. Its deficiencies are my own.

My non-technical collaborator in the writing of this book has been my wife, who not only has shared the vicissitudes of its preparation, but has been also an unfailing source of encouragement, discerning and sympathetic criticism, and constructive suggestion. Without her coöperation the book could not have been written.

HORACE TAYLOR.

Columbia University,
June, 1928.

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CHAPTER I

TWO CONFLICTING HYPOTHESES AND THE ECONOMIC ANOMALY

Not the least striking of the scholarly differences among economists are those which concern the nature of social organization and the essential social interests in the economic system. It hardly need be said that the kind of society or of social need that an economist conceives or tacitly assumes to exist may do much to color his reasoning and to determine his conclusions. Regardless of whether he considers his field of work to be "an inquiry into the nature and the causes of the wealth of nations," or as an examination of "that part of individual and social activity which is most closely connected with the attainment and with the use of the material requisites of well-being," or as "the science that treats phenomena from the standpoint of price," or as "the social science that treats of man's wants and of the goods upon which the satisfaction of his wants depends," the economist must have some hypothesis, implicit if not explicit, concerning social organization, or social needs and aspirations, or both.

The discrepancy among fundamental attitudes in economics is thrown into relief by two opposing contemporary points of view. The first of these shows society to be one body, the physical components of which are delicately adjusted, closely articulated, finely

synchronized working parts—a materially autonomous body with one purpose and a directing intelligence. The other point of view reveals society as an exceedingly unstable aggregate of individuals, possessing little unity of need, torn by more or less organized counter purposes, deficient in potentialities for promoting individual and group welfare, made one only by force of laws, traditions, mores, which are, in present conditions, obsolescent and arbitrary.

Although both of these conceptions are manifest in our contemporary ideas, neither of them is strictly original with us. Plato's ideally functionalized state was not compatible with the care-free individualism of the Epicureans. The spiritual unity of Christian society as conceived in the divinely ordered universe of St. Thomas and Dante was challenged by the individualistic theology of the Protestant Reformation. That which distinguishes modern forms of these ideas from those which prevailed in antiquity and the Middle Ages is the fact that they are more directly concerned with economic institutions and practices than with theology, ethics, or politics—though certainly they are inevitably associated with programs and implications which involve morality and political control. This distinguishing characteristic is both a cause and an effect of the development of political economy as a science.

The Orthodoxy of Social Unity

It is in the so-called "orthodox" economics—the economics of natural law and natural order—that the doctrine of social unity in process, need, and purpose finds its most elaborate and profound expression. The Physiocrats were the first to give it a comprehensive presentation. The *Tableau Economique* may appear to us as unwarrantedly simple; but it is none-the-less a

picture of a unified, functionalized, and coöperative economic society. Adam Smith's system was similar but more complicated. In it productive division of labor, coördinated through the market, gave society coherence and its essential oneness. None of these scholars was contented with things as they actually were. But *laissez faire*—the emasculation of the state by which it would become a mere passive policeman—was a far-reaching corrective. In such a state, natural law would triumph over artificial restriction; social and individual ends would become identical to the unending benefit of the state and the citizen. The social bases of production, ownership, and exchange were natural and altogether desirable. Such defects as made the interests of the individual incompatible with those of the society were comparatively superficial and would disappear under the beneficent operation of natural law.

The nineteenth-century classical economists inherited these ideas, recast them, and perpetuated the doctrine of social unity. But whereas Smith and the Physiocrats had breathed hope and faith into the body of their new science, the later classicists inoculated it with the toxin of despair. Like their precursors they were concerned with the *nature* of society. And, unlike them, they discovered and codified the laws of that nature. Smith had been impressed with the essential benevolence of nature—her good will toward man. Ricardo found in her nothing but niggardliness, and saw in every natural law an ultimatum to man—a warning of impending destruction. The vision of material progress was gone forever; crushed by the weight of the basic laws of population and diminishing returns and their famous corollaries, the laws of wages and rent, man was indeed doomed to eat bread in the sweat of his face. And any prospect of more bread or better bread was indefinitely remote. In the hands of

the Ricardian classicists the doctrine of *laissez faire* was less an antidote for social ills than a mere palliative. Confronted by stern and immutable natural laws, social control through the state could only intensify conditions which were inherently and unchangeably severe.

Although the laws of nature, thus discovered, were far different from what the Physiocrats and Smith had conceived them to be, the nineteenth-century classical economists were in complete agreement with their doctrinal forbears in regard to their fundamental conception of the economic organization of society. It was a conception which the science of the Age of Enlightenment made inevitable. Society to Smith was one body, tied together by coöperative division of labor and the market. The Ricardians went farther and, patterning their society after the physical universe of Newtonian science, outlined a machine the cogs and wheels and levers of which were economic men. Like any machine it was somewhat narrowly specialized; it could only produce and consume goods. Its capacity was limited by frictions imposed by nature and culture. It was one and indivisible although certain of its parts were roughly interchangeable. It worked—or idled and rusted—as one. The unmeshing of a single gear could render useless the entire machine. A cause here invariably gave rise to an effect there. *Laissez faire* was merely an effective lubricant which would enable the social machine to realize such narrow potentialities as it naturally possessed by reducing cultural frictions to a minimum.

Revulsion against the fatalistic pessimism of the classicists led certain of their contemporary opponents to a no less fatalistic optimism and an even more dogmatic declaration of social unity in need and purpose. Natural law, to these antagonists, was sufficient to explain the processes of the impersonal universe; the social order,

crystal pure and one in spirit, could only be a result of Providential design. A divine hand, even more powerful and deft and gentle than the "invisible hand" which manipulated Adam Smith's economic world, was beneficently busying itself in the material affairs of men. After examining the bases of social organization and finding them good, Bastiat wrote that "looking at this harmony, the economist can join with the astronomer and the physiologist and say: *Digitus Dei est hic.*"¹

More definitive and comprehensive were the findings of Carey, who, after an investigation into the essences of economic processes, concluded:

"That the interests of the capitalist and the laborer are thus in perfect harmony with each other, as each derives advantage from every measure that tends to facilitate the growth of capital, and to render labor productive, while every measure that tends to produce the opposite effect is injurious to both." And

"That the interests of all nations are therefore in harmony with each other as every measure that tends to lessen production in one nation, tends to lessen the reward of both laborer and capitalist in every other nation, and every measure that tends to increase it, tends to increase the reward of the laborer and capitalist in every other nation."²

In spite of the quite different postulates on which it rests, the doctrine of *laissez faire* rises as cogently and as inevitably from the optimistic ecstasies of Carey³ as from

¹ Bastiat, Frédéric, *Les Harmonies économiques*, p. 39. (Quoted by Gide and Rist, *History of Economic Doctrines*.)

² Carey, Henry C., *Principles of Political Economy*, Part I, pages 339-340.

³ The inconsistency in Carey's *laissez faire* position consists in his adherence to the policy of tariff protection. His defense of protection rests, however, on special grounds, viz., the prevention of greater commercial advantage to countries exporting manufactured products, and the faster rate of industrial growth and greater solidarity to be derived from protection.

the dismal forebodings of Ricardo. One realizes before he is told that for clumsy human hands to meddle with this inherent and all-embracing system of harmonies would be futile—even dangerous. The mere suggestion of it seems antisocial and irreverent.

Like the mechanistic society of the classical economists, the next phase of the conception of social unity came as a reflection of the prevailing attitude in natural science. Intellectually the first half of the nineteenth century was under the spell of Newton; there was a growing reliance on the empirical discovery and (where possible) the mathematical formulation of universal and static natural laws. The second half of the century was broadly influenced by Darwin; scientific interest in many fields came to center on biologic, cosmic, and social change. The doctrine of evolution originally applied to living things and concerned the natural selection and survival of them and their organs.⁴ Its application to the study of society was carried out by Spencer, through analogy, by the creation of his famous "social organism."⁵

As an organism society becomes even more thoroughly unified than was the producing, consuming, and self-renewing machine of the classicists. Natural laws no longer are mere far-reaching explanations of recognized conditions in space; they are instead descriptions of processes which operate through areas of time. The status of an organism—its highness or lowness—is determined by the diversity and mutual dependence of its organs and

⁴ It is true, of course, that the earlier theory of uniformitarianism in geology and the philological studies of the Romanticists were evolutionary. Yet the principle of natural selection originated in biology.

⁵ An appraisal of this analogy is not within the purpose of this study. Spencer's case is presented in his *Principles of Sociology*, Part II. An interesting evaluation of it in biological terms is in R. Austin Freeman's *Social Decay and Regeneration*, Chapter 3. A satirical and penetrating criticism by an economist is given in H. J. Davenport's *Economics of Enterprise*, pages 387-393.

the complexity of their functional interrelationships. Thus Spencer discovers in social change—the inevitable breaking up of the homogeneous into the heterogeneous—a sort of four-dimensional elaboration which is Progress. Unity no longer is an absolute; comprehensiveness and oneness in human society are achieved by degrees through the very process of functional differentiation.

This socio-biological hypothesis has its economic and political corollary in negative doctrine. The apologists for *laissez faire* no longer need rely solely upon the emotional appeal of Freedom and argument resting on static natural laws; in the evolutionary view of a growing world there appears a new guiding principle—be it magic or be it mere verbiage—which is Progress. Clearly, to meddle with the life-controlling organs of the social body will be but to interfere with a process which is good and which is social destiny. So set in this opinion are many of its adherents that they will not even agree with modern medical science that the removal of such evolutionary vestiges as the appendix may result in benefit to the organism.

Among those sciences whose subject matter is social institutions, Anthropology alone has attempted a thoroughgoing genetic account of the material with which it deals. Some economists have sought to discover and delineate specific trends in economic affairs. Yet Economics is not an evolutionary science.⁶ If not by definition, then at least by tradition and common consent, Economics is concerned almost exclusively with the phenomenon of value and its ramifications through society. Our theories concerning value treat it as of spontaneous

⁶ Cf. Veblen, Thorstein, *The Place of Science in Modern Civilization* (Huebsch, 1919), the essay entitled "Why is Economics Not an Evolutionary Science?"

generation rather than as a phase of a process. Yet the very fact of value appears to have been, to many recent economists, the spark of life which animates a social organism.

The latest manifestations of the doctrine of social unity in economic need and purpose, or of social harmony, either explicit or implied, have been based on value or evaluation. The marginal analysis ties together the interests of society as thoroughly as did Adam Smith's "invisible hand." We examine the distributive process as delineated by the doctrine of specific productivity to find that landlords, capitalists, and wage earners each get as large a reward as they can and all get just that to which they are entitled. And *entrepreneurs* secure profits or suffer losses because society rewards them for the intelligent and efficient manner in which they cater to society's needs, or penalizes them for their failure or inability so to cater.

An excellent statement of the identity between social and individual interests, worked out through value and evaluation, is the following from the pen of Professor Carver:

Let us consider rather carefully the field of service wherein needs and desires coincide. This is the field of worthy business enterprise and of constructive politics. In this field the selfish business man and politician will do very much the same things that a philanthropist would do, the only difference being that the business man or the politician may accept a reward in the form of money or votes, whereas the philanthropist would not.

Suppose you are a pure philanthropist with no selfish motive whatsoever and are looking about for an opportunity to be of service to your fellow men, but you have chosen some form of service which consists in supplying needs of which the people are fully conscious and appreciative. The market demand will be a pretty good indication as to what people

need. It will indicate where the most pressing need is and where there is the greatest scarcity of service. As a philanthropist, you should seek to perform some service of which there is a pressing need because of its scarcity, rather than to perform some service for which there is no pressing need because of its abundance. If you find, for example, that the supply of farmers, relative to the demand is small, and that the supply of servants in any other field which you are capable of entering is pretty well supplied already (is large), it would then be your duty as a philanthropist to become a farmer rather than to enter one of the other occupations. If, having become a farmer you find that certain crops are already well supplied, so well supplied that there is no pressing need for a larger supply, but that there is one crop which is undersupplied, so much so that there is a pressing need for more, as a philanthropist you should grow this crop which is scarce. *It will be noticed, however, that in making these two choices you will be choosing exactly as a business man would who was seeking, not philanthropy, but profit.*⁷

Thus for a period of a century and a half the eyes of men have surveyed the concatenation of activities about institutions which we call economic society and, though seeing quite different facts and discovering quite different meanings, found the same pattern and the same plan in the whole. To all of them it has appeared that the realization of strictly economic individual interests controlled on every side by the competition of other individual interests, is sufficient to insure the realization of that somewhat vague end—the social interest. Among the various particulars of doctrine which we have examined in this brief survey, quite different emotional reactions to the facts or postulates are to be observed. Yet the gloomy pessimism of the Ricardians is in contrast with the rapturous contentment of their equally orthodox

⁷ Carver, Thomas N., *Principles of National Economy* (Ginn, 1921), pages 56, 57. (Italics by the present writer.)

opponents Bastiat and Carey—and even with the complacency of Spencer in the contemplation of his new-found Progress—not because the free economic man is other than a devoted and efficient servant to society, but rather because of the pressure of harsh and external natural forces which confine man's material potentialities within extremely narrow limits. And most (but not all) of the neo-classicists, in keeping with the impersonal and unemotional aloofness of the more sophisticated spirit which animates science to-day, are content to describe the harmonious ramifications of the value phenomenon in a competitive society without actually smacking their lips. Yet the implication, like the disharmonious poor, we have always with us.

The Heterodoxy of Social Disunity

Doctrine appears invariably to arise out of argument. The very postulates and conclusions which we calmly and coolly regard to-day as the stern and rockbound tenets of orthodox or conservative political economy were, in their origins, the dialectical bases for heated attacks against the then existent order of things. The Physiocrats and Adam Smith championed personal liberty in economic affairs—and declared that only in the exercise of such liberty could harmony between individual and social interests be reached—at a time when conservatism meant adherence to the principles of mercantilism and when economic liberty, in any comprehensive sense, did not exist. The later classicists received the ideas which had been deduced from premises relating to agricultural, commercial, and handicraft conditions and recast them into consistency with premises which related to industrial affairs. Thus political economy, without important change in form or content, has been metamorphosed by the friction of social and economic change from a quasi-

radical argument against the status quo into a conservative apology for "business as usual." Our economic laws no longer admonish us concerning what ought to be done, but rather describe the processes of economic phenomena in the placid state of things as they are.

And yet the very existence of classical and neo-classical orthodoxy and of the institutional life whose protagonist it is, furnish the bases for new doctrinal attacks and fresh argument. To the orthodox ideas we are indebted for the stimulation of a multitude of richly varied opposing theses, some of which have come to be only highly idealized and fanciful pictures rather than practical working programs, many of which have been impregnated by their creators with the vitalizing germ of realism, most of which have been sporadic in their grip on the imaginations of people or abortive in their applicability to concrete situations. Yet, while these attacks on economic orthodoxy have varied widely in tone, color, point of contact, and validity, they have unanimously taken issue with the orthodox conclusion that there is an inherent compatibility, unity, or harmony between individual and social interests.

Among economists whose ideas have had far-reaching influence, the first to launch a broad offensive against the orthodox position was the Continental scholar, Simonde de Sismondi. And so firm was the grip of classical doctrine on the cult of economists in the 1830's that Sismondi was outlawed from the craft and, without recognition by his academic contemporaries, left to cry alone in what seemed to him a wilderness of sterile scholasticism. With all the vigor of his mind and the bitterness in his heart Sismondi deprecated and assailed the notion of an existing identity of interests. That such a condition might and ought to exist he had no doubt.⁸ But he could find

⁸ Sismondi, *Nouveaux Principes d'Economie politique*, vol. 1, p. 407.

no reason for assuming or expecting it in a *laissez faire* competitive industrial state.

Yet Sismondi was not a socialist. With private property he had no quarrel; his chief complaint was only that ownership was not more evenly distributed. The facts of distribution—that some men are rich and others poor and that the poor must achieve their material destiny of a bare subsistence through the roundabout method of catering to and serving the rich—were sufficient to dispel any illusions concerning the identity of interests between the two classes. In the process of production itself, whenever and wherever the pecuniary interests of business men might drive them temporarily to contribute to social welfare by making as many goods and rendering as many services as lay within their power, human error in regard to hypothetical markets invariably resulted in overproduction and social disaster.

As for machine industry, Sismondi regarded it as both symbol and cause of most economic evils. How could the classicists glorify its very existence and justify its displacement of labor on the grounds that it made for more and cheaper goods? How, indeed, when the process of displacement rendered multitudes of workmen incapable of buying the goods even at the lower prices, and when its total effect was to widen still further the gap between the interests of the rich and those of the poor? And, granting that a benefit accrued, was it to society as a whole? Did workmen share in the gains which were achieved through their deprivation and misery? Sismondi could answer these questions only in the negative. In the light of social history—in which field he was a master—he believed that a union of social and individual interests could only be achieved by a reversion to an economy of peasant proprietors and handicraftsmen. In that way alone might there be a more equitable distribu-

tion of wealth and a consequent disappearance of class interests before an all-embracing solidarity. Yet he left his task unfinished; he did not show how the turning back of time and institutions was to be accomplished. Sismondi's greatest efforts were given to iconoclastic ends—the destruction of economic idols. He neither succeeded in their demolition nor did he construct a new faith to replace them. Yet he delivered telling blows against the then almost impregnable position of orthodox classicism and welded arguments which, in other hands, were to become the weapons for fresh onslaughts against the doctrine of identity of interests in society.

Since Sismondi the heterodox offensive has been carried on along two fairly distinct lines. The first has concerned itself with attacking the two basic elements in economic conservatism, private property—which, since Locke's individualistic justification became useless, has been defended on grounds of social utility—and freedom of enterprise in its negative *laissez faire* sense. The second and more recent plan of campaign, which has drawn forces away from as well as supplemented the first, has been concerned less with the foundations of the orthodox fortress than with its ramparts. Private property having been loosened—if only slightly—from its moorings in the cultural rock by the high explosives of the communists, and *laissez faire* having been chipped about the corners and edges by the heavy artillery of the interventionists, these new crusaders have trained their guns on the flaws which they have found in the stones of conventional industry and the mortar of traditional pecuniary organization. Let us briefly examine the records of these two campaigns.

The first of the advances against the orthodox position has been through the growth and spread of collectivistic doctrines and those which aim at social reorganization

along coöperative lines. Any extended discussion of these various programs themselves could only total up to a statement of their doctrinal content. Obviously and necessarily the arguments and proposals for reform through collective action are predicated on underlying hypotheses of struggle and disharmony in economic society. Nor can the success or failure of actual social movements be taken as a test of the validity of the hypotheses from which they rose. The model community plans of Charles Fourier and Robert Owen were abandoned in despair by their adherents. The latter's experiment with labor exchanges and labor notes in the effort to eliminate parasitic profits was doomed to failure from its inception. The highly idealized communities of coöperative producers, conceived by such devout Christians and ardent citizens as Frederick Maurice and Charles Kingsley, never flowered into reality. The social workshop project of Louis Blanc was thoroughly—if perhaps unfairly—discredited in the early days of the French Revolution of 1848. Many followers of Karl Marx, possibly because of the ennui resulting from their interminable wait for the dawning of the inevitable but unpredictable day of the glorious revolution, slipped away from the fold to associate themselves with more definite and immediately fruitful plans involving direct action and collective bargaining. The single-tax proposal, so greatly popularized by the gifted tongue and pen of Henry George, has to the present found only a modified expression in law. Of all the collectivist movements which had their beginnings during the last century, only two—consumers' coöperation and trade unionism—appear, in rather different degrees, to have secured a definite place in the social scheme of things. But, successful or not, and without reference to the potentialities they hold for the future, the very fact that collectivistic doctrines found expression

in positive activities of social groups gives a powerful support to the hypothesis on which the doctrines are founded, namely, that there is an inherent conflict between the interests of individuals and groups which constitute economic society.

To the evidences educed from the several programs of socialism and coöperation must be added those which appear in the ever-rising tide of interventionism. Political democracy (within limits imposed by the condition that many persons may not know what their economic interests are) affords opportunity to a widely differentiated electorate to express individual choices in an effective way and thus gives a certain flexibility to institutions and practices. Political scientists, as well as "practical" men of affairs, have seized upon this instrument as a means to the achievement of social reform. Nor has there been a lack of support from active politicians and statesmen. Party platforms—with a purpose perhaps of attracting this or that "bloc" of voters—contain proposals for restrictive, regulative, and promotive activities by the state. And David Lloyd-George and Ramsay MacDonald in England and Theodore Roosevelt and Woodrow Wilson in the United States have been, in their various ways, as devoted champions of positive neo-mercantilistic liberty as ever were Richard Cobden or Sir Robert Peel of the purely negative liberty of *laissez faire*. Thus while socialism has not been able to destroy private property, social control and the wider spread of the conception "vested with a public interest" have shorn it of much of its sanctity—even though vested private interests and the right of inheritance have been so deeply rooted in our institutional life as effectively to prevent any thoroughgoing coördination between private property and social contribution. And, in the same manner, *laissez faire* has been somewhat restrained from the exercise of

its former reckless and perhaps brutal freedom by more or less adequate shackles which have been welded by interventionist policy. Yet, in spite of the fact that their meanings are rather more restricted than formerly, private property and freedom of enterprise remain the cultural bases of economic society.

In view of these circumstances there has grown up in comparatively recent years a fairly definite body of economic thought which is directly opposed to the traditional orthodox belief in an identity of interests in society and which also is distinct from, though closely related to, the doctrines which point the way to reform through social control. It is this development in scholarship which was described at an earlier point in this discussion as the second line of heterodox attack against the orthodox position. Here is no armchair philosophy or platitudinous lip service to the idols of our fathers. Here rather are the fruits of a multitude of researches into the innermost workings of our economic system. From the study of genuine and quantitatively determined symptoms these researches offer a diagnosis of the ills of the economic body and suggest reasons for its excess of bile, its chronic rheumatism, and its occasional brain storms. The trouble is presented as in large part a systemic infection induced in the productive organs and the distributive tract by a failure of metabolism under conditions of a money economy—the situation in which the material affairs of individuals are centered about the making and spending of money incomes. The complication of symptoms renders it exceedingly difficult to follow up the diagnosis with the prescription of a specific remedy or to offer a prognosis concerning what turn the ailment may take. But the diagnosis furnishes a fairly satisfactory point from which to start. And it is so strongly supported by quantitative and inductive evidence that

to fail to reckon with it would be the sheerest folly.

The idea itself, that there is a high degree of incompatibility in a money economy between the social end of making goods and the individual end of making money, is not a new one. Sismondi was explicit in his statement of it. And Thomas Carlyle expressed it in his very perplexity over the paradoxical situation of poverty in the midst of plenty. The special significance of its more modern expression is due to the fact of its inductive origin and to the further fact that the central position given it by some of the ablest of contemporary economists places a new emphasis on, and indicates a new approach to, the study of economics. The thesis cannot be more clearly stated than it has been by certain of its present-day exponents.

Professor Veblen, who has laid particular stress on this idea in several of his works, presents it as follows:

With the continued growth of specialization the experts have necessarily had more and more to say in the affairs of industry; but always their findings as to what work is to be done and what ways and means are to be employed in production have had to wait on the findings of the business managers as to what will be expedient for the purpose of commercial gain. This division between business management and industrial management has continued to go forward, at a continually accelerated rate, because the special training and experience required for any passably efficient organization and direction of these industrial processes has continually grown more exacting, calling for special knowledge and abilities on the part of those who have this work to do and requiring their undivided interest and their undivided attention to the work in hand. But these specialists in technological knowledge, abilities, interests, and experience, who have increasingly come into the case in this way—inventors, designers, chemists, mineralogists, soil experts, crop specialists, production man-

agers and engineers of many kinds and denominations—have continued to be employees of the captains of industry, that is to say, of the captains of finance, whose work it has been to commercialize the knowledge and abilities of the industrial experts and turn them to account for their own gain.

It is perhaps unnecessary to add the axiomatic corollary that the captains have always turned the technologists and their knowledge to account in this way only so far as would serve their own commercial profit, not to the extent of their ability; or to the limit set by the material circumstances; or by the needs of the community. The result has been uniformly and as a matter of course, that the production of goods and services has advisedly been stopped short of productive capacity, by curtailment of output and by derangement of the productive system. There are two main reasons for this, and both have operated together throughout the machine era to stop industrial production increasingly short of productive capacity. (a) The commercial need of maintaining a profitable price has led to an increasingly imperative curtailment of the output, as fast as the advance of the industrial arts has enhanced the productive capacity. And (b) the continued advance of the mechanical technology has called for an ever-increasing volume and diversity of special knowledge, and so has left the businesslike captains of finance continually farther in arrears, so that they have been less and less capable of comprehending what is required in the ordinary way of industrial equipment and personnel. They have therefore, in effect, maintained prices at a profitable level by curtailment of output rather than by lowering production-cost per unit of output, because they have not had such a working acquaintance with the technological facts in the case as would enable them to form a passably sound judgment of suitable ways and means for lowering production-cost; and at the same time, being shrewd business men, they have been unable to rely on the hired-man's-loyalty of technologists whom they do not understand. The result has been a somewhat distrustful blind-fold choice of processes and personnel and a consequent enforced incompetence in the management of industry, a cur-

tailment of output below the needs of the community, below the productive capacity of the industrial system, and below what an intelligent control of production would have made commercially profitable.*

The point is somewhat differently presented by Professor Mitchell:

In considering the national income it is obvious . . . that money is important because it represents goods, and that goods in turn are important because they contribute to welfare. But in the process of production as now organized these relations are reversed in large measure. Production is carried on more and more by business enterprises, and business enterprises must make money if they are to keep going. The men in charge of a business enterprise may be filled with zeal for public service, but they must make enough to pay expenses and something over or they will have to find some other way of serving the public than running a business. The men in charge of another enterprise may be engineers interested primarily in perfecting their processes and products; but they must keep their passion for technical perfection within the limits set by money profit or they will be eliminated from the ranks of business managers.

It is no disparagement of business men to say that in business they subordinate the making of goods to the making of money. They are compelled to do so by the system of which we all are parts. If they fail to get their profits they cannot go on making goods. And it is to the interest of all of us that business men should get their profits, as every period of business depression proves. For when business promises losses instead of profits, production falls off and the national income is diminished, in extreme cases perhaps by 10 per cent.

But while it is silly to blame any one for this situation, it nevertheless bristles with economic contradictions. From the national viewpoint money making is a means toward making

* Veblen, Thorstein, *The Engineers and the Price System* (Huebsch, 1921), pages 60-62.

goods; from the individual viewpoint making goods is a means toward making money. From the national viewpoint the engineer is the central figure in production; in practice he takes orders from the business man. A community is well off in proportion to its efficiency in producing a current supply of the necessities, comforts, and amenities of life; an individual is well off in proportion to his efficiency in getting a money income.¹⁰

Professor Hobson, one of the most astute of contemporary English students of economic affairs, in discussing productivity as essential to the ends of society, points out particular manifestations of the conflict between producing goods and securing money incomes:

. . . Even in America the machinery of production is wasting power, by low functioning of labor or plants, or both, by inferior technique and organization, unreliable finance, unsatisfactory transport and marketing arrangements. How big the total waste is nobody can do more than guess, and the guesses vary from, say, 50 per cent to 200 per cent. If the natural and human economic resources of the country were fully utilized, even up to the highest standards of equipment and operation actually in use, is it too much to expect that the output of available wealth would be doubled? At any rate, such an enlargement, and more, could safely be predicted for England, and for any industrialized European country. Such enhanced productivity we could take out in more goods and services or more leisure and enjoyment of life. Though the available natural resources will vary widely for different communities, sound trade relations will in large part pool any special advantages, as also the free flow of economic knowledge will generalize the command of man over nature, now admittedly adequate to supply all his legitimate needs.

What holds us back from realizing this economy of high

¹⁰ Mitchell, Wesley C., *Making Goods and Making Money*, a paper read before a joint session of The American Economic Association and The American Society of Mechanical Engineers, December 6, 1922. Quoted by permission of the author.

production? It is necessary, first, to make it clearly understood that the "holding back" is at all points a more or less conscious policy of men engaged in industry. Restriction of output, for prolongation of the job, for spreading employment, sometimes also from laziness or for a check on "profiteering," is charged against the individual workman or the labor unions in many trades, with a considerable element of truth. Though, as we see, other motives may enter, the main pretext for this individual, or collective "ca' canny" of workers is the belief, often well founded, that markets furnish no security for full continuous employment, and that, if they put out too much work short time or stoppage will ensue. Economic sermons from economists upon the elasticity of demand which will necessarily follow low labor costs, and will reward the worker for his greater efficiency, fail to carry the necessary conviction to his mind. He has no faith in an early and inevitable expansion of the market for his personal labors. "In the long run" it may work out so, but from the necessity of his situation he is concerned with the short run. Blind to his own true interest, perhaps! But in Britain, at least, and to a smaller extent in America, labor is restrained from pursuing a policy of high production.

But what of the business men themselves who never tire of urging workmen to put forth their utmost energy so as to keep down costs? In times of rising prices and high profits they seek, indeed, to run their plants at high pressure. But at the back of their minds there is always a haunting fear, based upon long experience, that this policy of maximum production cannot last, that prices will soon decline, contracts fall off, profits disappear unless they and their competitors arrange to slacken the rate of output. This plainly recognized need to limit output, in order to maintain a reasonable level of prices and of profits, is the main incentive to the formation of trusts, combines, associations, agreements, by which cut-throat competition is suspended or displaced in most organized trades. The management of machine industry continually keeps a watchful eye upon the markets lest they show signs of being overstocked, in which case some slowing down of

production will be expedient. Just as the worker fears the cutting of wages if he works too fast, so the employer fears the cutting of prices if his plant turns out too much. Mr. Veblen, no doubt rightly, exonerates the manager, as engineer, from blame for this periodic or, in some instances, chronic sabotage of industry, imputing it to the domination of finance, or "the price system." But the point is that amid all this talk of the need and duty of high productivity both capital and labor in their several interests tacitly and consciously agree upon restricting output. Though as a fully conscious business policy this restraint applies chiefly to the great standard manufactures and their raw materials and power, agriculture and most minor trades have the same dread of overstocking their market.¹¹

Here we place our finger on the sore spot in the system. And yet it is more than a spot. All over and throughout the economic body the same soreness clings tenaciously. Its very comprehensiveness and the depth of its penetration combine to make it the most complicated case in the cultural clinic. Certainly the diagnosis cannot be adequately summed up in such technical terms of the economic profession as "unearned increment" or "proletarianization of the masses." Economic society—granting that it is an organism—has contracted that baffling and all-pervading disease, Pecuniaritis.

Gladly would we find health and happiness in our society. Yet in vain do we invoke the magic of Adam Smith's invisible hand, and listen for overtones of harmony in the dissonance of sounds in which we live. Even the interlocking processes of value appear to intensify our troubles rather than to ameliorate them. And whose is the fault? It lies with all of us. We do not realize the great material potentialities of our social existence because, while constituting a society, we remain indi-

¹¹ Hobson, John A., article in *The Nation*, vol. cxx, pages 290-293 (March 18, 1925).

viduals. Each good citizen is the law-abiding enemy of his neighbor—and of himself. Each is so clumsy that he gets in his own way, so nearsighted that he stands in his own light. It is a situation with which all of us should be concerned, not because we are altruists or philanthropists, but because we are as selfish as we are.

It is the economic anomaly. Can it be resolved?

CHAPTER II

THE ECONOMIC ANOMALY: RESOLUTION OR COMPROMISE?

THE degree of material welfare attained by a society is a derivative of two sets of circumstances: first, the amount and character of goods currently produced and services currently rendered; and second, the way in which these goods and services are distributed among the members of the group. The material welfare of each individual is determined by his own achievements in securing goods and services for himself. Abstractly considered, these two statements are in no way antagonistic; they involve no contradiction in terms. There are two conditions under which social and individual interests do not run counter to each other but rather are actually and entirely complementary.

The first of these conditions is predicated upon a pre-determination of distributive shares. If the proportional amount of goods and services to be received by each individual out of the social product were fixed in advance of production, it would follow that every person would gain most when production was largest. The communistic formula, "from each according to his abilities, to each according to his needs," is entirely consistent with the present assumption. Yet this condition offers no assurance of actually increased production or of a higher average level of material well-being. It often has been pointed out that what is everybody's business is nobody's business, and that the socialization of responsibility makes for individual irresponsibility. In the case of the

communistic principle, for example, it would be possible to allocate distributive shares by some rough measure of each person's needs; but no one ever has devised a method for compelling every person to exert his productive energies "according to his abilities." What profit it society if it gain an ideal system of distribution, but creates little or nothing to distribute? Then too, people want more of an economic system than that it merely supply them with goods and services. Modern psychology has thrown much light on the divergent tastes, aptitudes, and aims of different persons—the myriad "individual differences" which make people individuals. These varying propensities and psychic needs are best served, within broad limits, by liberty. Liberty consists solely in the exercise of choice. Somewhere between the extremes of *laissez faire* on the one hand and communism on the other, choice finds its most effective expression. But it is clear that liberty would be seriously limited by the condition we have assumed. It follows, therefore, that even if the plan suggested actually would achieve a larger material well-being for every individual, it probably would result in a lessening of total gratifications. And social strife would not thereby be obviated. The distinctive class interests which appear most strongly to influence people in the direction of radicalism or of reactionism probably would be replaced, under communistic conditions, by a new set of conflicting economic aims—as, for example, a struggle over occupational status.¹ So we may conclude that, while the condition assumed here would harmonize social and individual interests in production, its potentialities in the way of socially and individually undesirable accompaniments more than counterbalance the benefit it promises.

¹ Cf. Veblen, Thorstein, *The Place of Science in Modern Civilization* (B. W. Huebsch, 1919), the essay entitled "Some Neglected Points in the Theory of Socialism."

The second condition which would remove all conflict between social ends and individual aims is the conceptual opposite of the first. It involves a complete individualization of responsibility for production. If the production of goods and services and their distribution were made a single process, each person would prosper in accordance with his own productive activities. Under the present assumption every individual or family would produce all that it consumed and consume all that it produced. Exchange would not occur—and so “society,” in its economic sense, would cease to exist. Yet the material welfare of the group and of every individual in it would depend entirely on the quantity of goods produced. That such a condition never has existed (so far as we know) since the beginnings of the human race is no argument against the logical legitimacy of our claim that it would serve to unify the particular interests with which we are concerned. The practical defects of the plan are obvious. In this case, even more inevitably than in the former one, a decrease in the material well-being of every individual would accompany the condition described. The amount of goods produced and services rendered is as large as it is to-day only because division of labor makes it possible. And division of labor can exist only by virtue of exchange. No human being could be successful as farmer, musician, weaver, blacksmith, cook, physician, and in the performance of the countless other functions necessary to the creation of goods and rendition of services which are common to-day. Nor could any single person build and operate a railroad, construct a skyscraper, or run a factory. It follows that the realization of this condition, even if it were possible, would not be desirable. Its consequences would be so grave that most of the population of the earth would perish. If such an arrangement were forced upon us it

would constitute the greatest catastrophe in the history of mankind. Thus in this case, as in the former one, we are not willing to bear the cost incident to the unification of social and individual interests.

One other possibility remains: human nature might change. But, so far as is known, man has undergone no mutation in the last forty thousand years. And such biological evidences as we have argue against any metamorphosis of individual interests into group interests so far as these concern material welfare. Human beings are individuals before they are members of a group, and socialization ideally is only a means to individualization. For practical purposes therefore, we may again assert that the two conditions discussed above are the only ones in which the interests of every individual would be entirely compatible with those of the group.

The reason that the economic anomaly exists is because neither of these two conditions exists. Our social organization, on its material side, is a situation in which private property and freedom of enterprise function through, and express themselves in terms of, a money economy. By a "money economy" is meant an institutional arrangement in which the material activities of people consist of making and spending money incomes. Money occupies a central position in contemporary economic life because, as Professor Alfred Marshall has said, it is the medium in terms of which economic motives express themselves. In these industrial times we have approached a condition in which the entire range of economic conduct—both productive and consumptive—results from choices between pecuniary alternatives. By this statement no implication of rationality is intended. Our only claim is that the present material organization of society is coming more and more to be one in which alternatives present themselves in pecuniary terms and, reflectively

or emotionally or habitually, and whether they like it or not, people must choose. Nor do we mean that pecuniary motives dominate and direct all economic behavior. Yet the material needs of man, conditioned as they are by our institutions, cause every individual's welfare to be regulated very largely by pecuniary considerations.

The money economy does not, of itself, cause the economic anomaly. The same friction between social and private ends would occur in a system of barter, if private property and freedom of enterprise remained basic cultural determinants. Yet the money economy intensifies the already existent condition. Because of its influence the primary economic interest of every individual consists in making money. Making goods is only a means to that end. A person's command over want-satisfying goods and services is determined not by his usefulness to society or his virtues as a citizen, but by the amount of money at his command. And production is "for the market." It has been amply demonstrated in the preceding chapter that the securing of a pecuniary command over the society's store of goods and services may come as well from a mere strategic advantage as from an exchange of benefits on a basis of *quid pro quo*.

Yet the money economy offers opportunities for material gain which are broader than mere anti-social sequestration. The liberty which it affords consists of more than mere absence of restraint. On its positive side it secures to individuals a wider range of choice, both productive and consumptive, than any other system that we know. That it has evolved through a process of human selection has been very ably asserted by Professor Mitchell. He points out that, in spite of the grave consequences produced by the subordination of our common interest in making goods to our individual interest in making money,

. . . the money economy is doubtless the best form of economic organization for promoting the common welfare which men have yet devised. This opinion is based on the fact that the money economy has developed out of simpler forms of economic organization in all the most progressive nations of the world, and that, broadly speaking, this development has been spontaneous. No one forced our forefathers in America to give up raising their own food, making their own clothing, and cutting their own fuel. They changed from the practice of making goods for their own families to the practice of making money incomes and buying goods made by others because they liked the results of the more elaborate plan better. In mediæval times the king of England traveled around the realm with his court subsisting on the produce of the royal manors. When the king began to commute the labor services of his villeins and their dues in kind into money payments, the villeins shared with the king in the advantages of a better arrangement. So almost all the elaborate machinery of the money economy has grown up by slow degrees because men thought they got more goods or better goods when they worked for money than when they produced for themselves. The villeins have been converted into wage earners, the craft guilds have given way to the merchant and the factory, the weekly markets where neighbors met to barter have been superseded by retail shops, banking has evolved from small beginnings into an ubiquitous business, the joint stock company has become the dominant form of business organization, all because on the whole these changes recommended themselves on trial to large and growing sections of the population. Of course most of these changes were accompanied by grievous hardships to many individuals, but if the new organizations had not filled demands numerous enough to make them pay they could not have broken through "the cake of custom."

It must also be set down to the credit of the money economy that it is a marvelously flexible institution. It has been developed in a dozen ways undreamed of by the mediæval money lender. Its capacity for further development and

adaptation to human needs has no visible limits, except the limits of man's capacity for invention.²

It appears most probable that the existing economic system, in its broader aspects, possesses benefits to society and to the members of society which more than offset the undesirable consequences of the economic anomaly. And this disunity of economic interests, let it be remembered, inheres in any cultural arrangement which involves private property and freedom of enterprise. We have examined the only two possible conditions in which the anomaly conceivably would not exist. One of these assumes a complete regimentation and unification of the productive activities of society with entire control vested in society itself. The other is predicated upon the absence of any organization, or of any control other than that independently exerted by each individual. Both of these conditions would be difficult of attainment and are fraught with a multitude of dangers to economic welfare.³ Thus any complete resolution of the problem we are studying involves scrapping the system which we have and are familiar with in favor of one which does not exist, about whose total potentialities for good we can only conjecture, and concerning whose general possi-

² Mitchell, Wesley C., *Making Goods and Making Money*, a paper read before a joint sessions of The American Economic Association and The American Society of Mechanical Engineers, December 6, 1922. Quoted by permission of the author.

³ In regard to the conflicting schools of communists and anarchists who respectively, and in effect, have advocated the conditions referred to here, it must be pointed out that they were not dealing with the "economic anomaly" as herein conceived. The various justifications offered for their positions, and the problems about which they center their arguments, range all the way from class struggle to the prospect of human perfectibility. Their particular programs are urged either on grounds of expediency to the special consideration, or on the contention that "man does not live by bread alone," and that any material losses incurred will be more than counterbalanced by gains of other kinds. And in some instances (e.g. certain of the utopian descriptions) the aim seems to be less to prescribe a practicable plan than to set up something pleasant and stimulating to think about.

bilities for ill we can be reasonably certain. The fact remains, however, that something ought to be done about the situation. But what?

Clearly, if we do not care to assume the consequences of a complete resolution, there remains but one thing to do. We can only seek the elimination of as many as possible of the special instances in which social and individual ends run counter to each other and thus to minimize the scope of conflict. This does not mean a surrender to the condition, but rather a compromise with it. There are, generally speaking, two ways in which such a modification of the economic anomaly may occur. The first of these eventualities, social control, is the only means we have of purposively subordinating individual interests to the will of the group. The second does not involve public action or volition but is instead a phase of cultural change. It is the possibility that, because of trends and tendencies inherent in the actual conditions and processes of production—rather than external to them—it is becoming increasingly necessary to make goods in order to make money. The remainder of this chapter will be devoted to an examination of these two modes of compromise with the economic anomaly, and to an indication of the procedure to be followed in this study.

Social Control of Economic Activity

Society means control. It also, of course, denotes and connotes a multitude of other conditions and qualities. Of fundamental importance, however, is the fact that relations of any character between two or more people necessarily and invariably are affected by restrictions and sanctions to which each member of the group is required to adhere. Enforcement may be direct and physical or—as in the case of many taboos and *mores*—

may consist in the no less positive and effectual pressure of social preferences. Control which is enforced by the first of these two methods comes, in any orderly society, within the province of law. That enforced by the second method is embraced within the field of morality. Since they are mutually engaged in the regulation and direction of conduct in society, it follows that both law and morality are concerned with similar problems. Yet, as will be demonstrated at a later point, their cultural origins are quite different.

In so far as law and morality are related to the economic activities of individuals, they are both causes and effects of material social circumstances. The very arrangements of such cultural devices as the Roman *collegium* and *colonnate*, the medieval guild and system of vassalage, the modern trade-union and democratic state, are results of economic conditions as well as being themselves determining economic influences. Social control is thus trying to keep in conformity with, as well as to regulate and direct, the changing cultural structure.⁴ This cumulative character of social change intensifies and complicates the problems of social control.

Although both the legal and the moral phases of social control in its economic aspects are reflections of prevalent cultural arrangements as well as determiners of them, it nevertheless is true that they reflect quite different elements in the cultural complex. They are like two precious stones, both of which react to light, but each in its own discriminating way—the diamond throwing off the blue-white rays, the ruby the reddish ones. Law reflects socializing influences; morality, under modern conditions, reflects those which are individualizing. The selective process of the law consists in identifying, objectifying, protecting, and promoting the interests and aspira-

⁴ Cf. Ogburn, W. F., *Social Change* (B. W. Huebsch, 1922), *passim*.

tions of the sovereign as they exist in the prevailing culture. In a modern democracy these are presumed to be the interests and aspirations of the whole people. Whether they are precisely so or not, the electorate and the responsible officers of government act *as if* they were; and the acts themselves are willed, or at least tolerated, by the people. The sale of a birthright or a vote or an ideal for a mess of pottage may be accounted for on grounds of enlightened expediency or of ignorance or of coercion, but the transaction is none the less entered into. In any event the legal phase of the social control of economic activity is, under modern industrial conditions, a reflection of the predominant interests, aspirations, weaknesses and mistakes of all the people of that jurisdiction taken together. Thus law arises from the common needs, common fears, common aims, common superstitions, which are *socializing* influences. The common need for goods and services ought to be such a socializing influence. Is it not possible, therefore, so to legislate against the economic anomaly as definitely to narrow the range of its operation? Postponing for the moment our consideration of morality, let us examine the applicability of law to our problem.

Government is the institution which protects, regulates, and promotes the other institutions of the society encompassed by the political jurisdiction. Laws are the rules of conduct which are promulgated and enforced by a government. The sources of law are three: custom, legislation, and adjudication, all of which are, for practical purposes, of equal authority.⁵ In a modern democratic state the foundation of law is a constitution which delineates the structure and powers of the government and commonly also the rights, privileges, prerogatives

⁵ For an elaboration of each branch of this tripartite division of legal sources, see Clark, J. M., *Social Control of Business* (University of Chicago Press, 1926), pages 92-95.

and exemptions of both citizens and alien persons. Constitutional guarantees and prescriptions concerning any institutional arrangement may be elaborated or given effect, but may not be abrogated or abridged, by statute.

Among the several provisions of the Constitution of the United States which affect economic institutions, the most important to the problem in hand are those which relate to private property and personal liberty. These conditions are made legally inviolable by the so-called "due process clauses." Apropos of the powers of the Federal Government, the Fifth Amendment to the Constitution declares that no person shall "be deprived of life, liberty, or property, without due process of law." The Fourteenth Amendment extends the same limitation to local jurisdictions by declaring that no state shall "deprive any person of life, liberty, or property without due process of law." Thus these two institutions, liberty and property, are sanctioned and protected by the basic law of the land.

Whether the property and the economic liberty guaranteed to people by the Constitution consist of rights to use and enjoy the things that one owns or of rights to do business, of rights to physical possessions or of rights to the pecuniary values imputed to the possessions, of rights to make goods or of rights to make money, is not stipulated by the Constitution itself. These questions, whether property guarantees are of use value or of exchange value, and whether economic liberty comprises mere freedom from restraint or the specific rights to barter and trade, have been among the most perplexing of the problems which the Supreme Court, in its interpretations of constitutional meanings, has been called upon to solve. In early decisions concerning these issues the court consistently held the term "property" to have its common-law meaning of physical things held exclusively for the

use and enjoyment of the owner and thus not to include such economic intangibles as a person's occupation or his business as apart from its physical appurtenances. The term "liberty" was construed as meaning freedom from personal bondage or slavery and as not including any specific right to engage in trade or conduct a business.*

These opinions, expressed in cases involving the extent to which states might go in the exercise of control over business and thus explicitly calling into question the terminology of the Fourteenth Amendment, were in effect reversed by later decisions rendered in cases of the same character. The new definition of "property" was expounded by the court in its decision of the *Minnesota Rate Case*.⁷ In this instance it was declared that "property" embraced more than the use and enjoyment of physical things; it included also the earning power of such things. The value of a possession was thus legally changed—according to Adam Smith's categories—from simply and solely its "value in use" to include also its "value in exchange." The changed conception of "liberty" was set forth a few years later in the *Allgeyer Case*. In a unanimous decision the court now declared: "The liberty mentioned in that Amendment (the Fourteenth) means not only the right of the citizen to be free from physical restraint of his person, but the term is deemed to embrace the right of the citizen to be free in the enjoyment of all his faculties; to be free to use them in all lawful ways; to live and work where he will; to earn his livelihood by any lawful calling; to pursue any livelihood or avocation, and for that purpose to enter into all contracts which may be proper, necessary

* These are substantially the definitions of the court as expressed in the majority opinion in the *Slaughter House Cases* (16 Wall. 36, 1872) and in *Butcher's Union Co. vs. Crescent City Co.* (111 U. S. 746, 1884). The same conception of "property" was held by the court in the case of *Munn vs. Illinois* (94 U. S. 113, 1876).

⁷ *C. M. & St. P. Ry. Co. vs. Minnesota* (134 U. S. 418, 1890).

and essential to his carrying out to a successful conclusion the purposes above mentioned. . . . His enjoyment upon terms of equality with all others in similar circumstances of the privilege of pursuing an ordinary calling or trade, and of acquiring, holding, and selling property is an essential part of liberty and property as guaranteed by the Fourteenth Amendment.”⁸ The meanings herewith set forth have been consistently applied by the Court in its decisions of later cases.

How effective, then, is the law as a means toward a partial resolution of the anomaly which we are studying? From the preceding definitions of constitutional meanings, it seems to follow that no direct and positive legislative action in regard to the matter is possible. Any statute requiring persons, either natural or corporate, to make goods or render services without regard to their private and acquisitive interests would be contrary to these determinate rights of property and liberty, and hence unconstitutional. Nor does it appear that the basic condition could be changed by amendment to the Constitution. As long as people are each and severally dependent on their own efforts for their material welfare and that welfare is related, as at present, to market conditions, it is not possible to coerce all persons into subordinating their individual interests in making money to the social interest in making goods. If individual responsibility, as well as private property and economic liberty, were removed from the institutional setting of human activities, something more than a constitutional amendment would have been accomplished. A transition to communism would have been made; and communism we

⁸ *Allgeyer vs. Louisiana* (165 U. S. 578, 1897). Quoted by Commons, John R., *Legal Foundations of Capitalism* (Macmillan, 1924). See this book, pages 11-46, for a complete account of the several opinions expressed by members of the court in regard to each of the cases mentioned here and of the transition of judicial definition of these two terms.

have seen to be a condition in which our problem would not exist.

Although it clearly is impossible, in the constituted order of things, to clear up the confusion and conflict between individual and social ends by means of direct legislative measures, it nevertheless is true that the condition can be, and is being, greatly modified by law. The institutional determinants of economic society remain an almost constant factor, but the special rules concerning them are steadily changing. Thus legislative enactments and court decisions which pertain directly to the conduct of business, or to contractual relationships of various kinds, tend to limit the field within which our problem operates. Judged by the ends which they serve, legal provisions may be divided among three distinct, but not mutually exclusive, classes: restrictive provisions, promotive provisions, and regulative provisions. Our consideration of the potentialities of law with respect to our problem will be facilitated by examining each of these categories independently of the others.

1. *Restrictive Provisions.* Restrictive provisions in law are those which expressly prohibit a certain line of action or delimit the scope of individual or group conduct. They are essentially negative in character in that *they specify what not to do*. The prohibitions and delimitations which they establish are intended to prevent any person from depriving another person of the liberty and property rights conferred on him by the Constitution. Anti-trust statutes and the common-law proscriptions of conspiracy are typical.

It immediately appears that laws of this type do not and cannot eliminate any phase of the economic anomaly. The individual rights which are protected are the identical ones which cause the condition to exist. Yet it is equally true that such laws, in restricting the scope of

economic conduct, reduce the number of ways in which the interest of individuals in making money runs counter to the interest of society in making goods. The Sherman Act is an instance. This famous statute, by forbidding "restraint" of interstate trade and providing penalties for violations, sought to eliminate the evils associated with monopolies. Thus one set of ways of making money other than by making goods was formally banned. The effects of the Sherman Act were, however, typical of those of many restrictive laws. In proscribing the exercise of monopoly power, the act served also to impede the growth of large-scale industrial enterprises with their many obvious productive advantages. Whether there was a net gain to society in the form of more goods, or a net loss because of hampered production, as a result of the Sherman Act, we shall never know. Both gains and losses are entirely hypothetical and it is not possible to add up and compare the debits and the credits.

2. *Promotive Provisions.* Within this class are included all of the legally promulgated functions and arrangements by which a government helps people to help themselves. Provisions of this type *neither negatively forbid nor affirmatively command* any specific activity or conduct. They merely create conditions which are (or are presumed or stated to be) conducive to the best interests of the public. The establishment and maintenance of public health agencies, of roads and bridges, of banking facilities and monetary systems, of research and educational institutions, of employment bureaus, of social insurance projects, and of industrial enterprises, are instances of such provisions. Any comprehensive appraisal of the importance of each of these functions and arrangements to the problem under consideration obviously is not possible. Yet their mere enumeration suggests a multitude of ways in which laws can and do modify the economic anomaly.

The Federal Reserve Act is as good an example as any of the effects of such provisions. The act imparted a marked elasticity to the bank credit resources of the United States. In the opinion of most students of the question, it has thereby secured a steadier and more consistently uniform proportionality between goods and services currently produced or rendered and the purchasing power available to the market. It is believed that this more stable condition of the market is one which is conducive to larger production than otherwise would be the case. Not all of our supposedly promotive arrangements and functions of government are so clearly favorable to enhanced production. It would be very difficult, for instance, to prove that certain of our protective tariff provisions are productive of a net gain in goods and services to the people of the United States.

The great range of services and facilities included within this category of "promotive provisions" of law is encumbered with a host of administrative difficulties. Hence they constitute intricate political problems as well as remedies—sometimes, perhaps, only sedatives or anesthetics—for economic and social ills. The importance of such provisions to a limitation of the economic anomaly lies not in any power of coercion but rather in their ability to facilitate production by making it pay. That is to say, it is possible by this means to establish determining conditions in which people may make money by making goods rather than by restriction or withholding of productive effort. How to achieve such results is an important problem to the statesman and the economist.*

3. *Regulative Provisions.* In this category are included all provisions of law which specify modes of conduct and

* Economists, especially in their studies of economic cycles and of price levels, have suggested many legal provisions of this type, e.g.: Fisher, Irving, *Stabilizing the Dollar* (Macmillan, 1920); Adams, A. B., *Economics of Business Cycles* (McGraw-Hill, 1925); National Bureau of Economic Research, *Business Cycles and Unemployment* (McGraw-Hill, 1923).

require that all persons embraced within the scope of the act (or the court decision or the custom) shall adhere to such specified modes. Provisions of this type are essentially affirmative in character in that *they indicate what must be done by stated parties in stated relationships with other parties*. This is an extremely complicated division of law because it necessitates the defining of relationships and the establishing of regulations which will not contravene constitutional rights of liberty and property—which, that is to say, will conform to the judicial tests of due process. In practice the field covered by this type of provisions is broad enough to include features as varied as pure food laws and the regulation of common carriers, all of which range of details is encompassed by a large and vague blanket authority called “the police power.”¹⁰

Under the ægis of the police power are included, first the protection of public safety, health, and morals, and secondly the regulation of such activities as are “affected with a public interest.” Our concern here is with the second of these phases. It is very difficult to define the characteristics of an industry or of a procedural element of business which causes it to be “affected with a public interest.” Determination rests entirely in the opinions expressed by courts, and courts appear to possess no stable criteria on which to build their judgments. As one member of the Supreme Court of the United States himself has phrased it: “To say that only those businesses affected with a public interest may be regulated is but another way of stating that all those businesses which may be regulated are affected with a public interest.”¹¹

¹⁰ The phrase, “police power,” is used here in its broader and more common meaning, which differs in content from the restricted and legalistic definition of police power as a residue of authority not explicitly covered by the Federal Constitution and hence residing in the several states.

¹¹ Mr. Justice Stone in his dissenting opinion in the case of *Tyson and Brother vs. Banton et al.* (No. 261—October Term, 1926).

Yet this statement, while clear-cut and true, begs rather than answers the question "why."¹² The courts clearly are seeking to protect the public against actual or potential coercion. Yet how and why a line is drawn which renders hotels, creameries, stockyards, and markets (to mention only a few regulated businesses) subject to a large degree of regulation, but excludes wage fixing in industries preparing foods¹³ and price fixing in the business of reselling theater tickets¹⁴ as subjects of legislative control, is difficult to understand. What constitutes due process is exceedingly vague. Suffice it to say that a line must be drawn and the courts probably draw it as accurately and effectively as is humanly possible.

To what extent can regulative provisions of law limit the operation of the economic anomaly? Greatly; yet the precise extent cannot be stated because we do not know in what specific instances the courts will permit the principle of "affected with a public interest" to be applied. Nor can we know until each instance has been reviewed by the Supreme Court. It is a further fact that this principle often is applied in ways which do not directly bear on our problem. Yet so far as regulation is of rates or prices charged and of the character of service to be rendered, it is cutting down the area in which private ends conflict with those which are social—

¹² See Tugwell, R. G., *The Economic Basis of Public Interest* (Banta, 1922), pages 45-79 for a summary and an appraisal of various economic theories which seek to explain public interest. Professor Tugwell's own thesis is that a business becomes "affected with a public interest" when a consumer's disadvantage exists, and that this is the condition under which the courts permit regulation of business. Professor Clark, in his *Social Control of Business*, suggests that the concept should be broadened to include sellers as well as buyers, as, for example, farmers selling cattle in stockyards. Several states have laws to protect the bargaining positions of sellers; e.g., a statute of Oklahoma requires that concerns which buy products at more than one point in the state shall pay the same prices at all points.

¹³ *Wolff Packing Co. vs. Kansas Industrial Court* (262 U. S. 522, 536).

¹⁴ *Tyson and Brother vs. Banton et al.* (No. 261—October Term, Supreme Court, 1926).

although it is clear that it cannot entirely remove the conflict even in the comparatively small number of instances in which the principle is employed. Common carriers, for example, are generally required to make their services available to those who are willing to pay the price for their legitimate use, to maintain specified minimum standards of service, and to charge rates which are prescribed as "reasonable." Thus there are removed many coercive powers of monopoly—but the carrier's property rights entitle it to a "fair" return, in other words to make a pecuniary gain from its operations. The fact that this pecuniary gain can be held down to a *fair* level, and that to secure it the carrier must supply an *adequate* service for a *reasonable* rate, is the important one for us. Precisely what these italicized words mean is uncertain; their ambiguities can only be removed—for purposes of regulation—by a court. In any event they cannot be defined in such a way as to permit a confiscation of property. For this reason the determination of what constitutes a fair return and how it equitably may be secured is a problem of major importance to economist, statesman, and business man. We may conclude that the legal regulation of business, in those fields of private enterprise which are "affected with a public interest," serves to modify the divergence between private and social ends. A corollary to this proposition is that further extension of the principle and the growth of a more adequate rate-making technique will serve further to modify it.

Taken in its entirety, the legal phase of social control affords a partial resolution to the economic anomaly. What of the moral phase?

It was stated above¹⁵ that "law arises from the common needs, common fears, common aims, common super-

¹⁵ Page 33.

stitutions, which are *socializing* influences." The moral phase of the social control of economic activity is, under conditions of private property and freedom of enterprise, a derivative of *individualizing* influences. Such conditions cause the ethical principles of economic conduct to be materialistic and, perhaps without most of us realizing it, thoroughly pragmatic. The first duty of a citizen is to look out for himself. In the field of material relations, *the good* consists not in any abstract ideal, but in ends which are as objective and real as the needs of human beings. Within the limits set by law, each person may engage in as much free enterprise and acquire as much private property as he is able. His individual interests are different, in varying degrees, from those of each other person. In so far as his needs and aims are similar to those of other members of the society, he tends to join with them in special interest groups, such as tariff leagues or trade unions, which exist solely to further the material welfare of their members and do not embrace all of the society. When all, or even a majority, of the citizens of a democratic state have a real or imaginary mutual interest that is material and definable and compatible with the constitution, it tends, as we have seen, to find expression in law. Thus all "right thinking" persons hold that the act of a merchant in "short weighting" a customer constitutes a wrong; it also constitutes a fraud. But outside the field of such widely held individual opinions there is little more uniformity in the strictly economic behavior or morality of human beings or special interest groups than is caused by the fact that certain modes of conduct are profitable or otherwise materially beneficial.

This fact appears to account for the degree of compatibility and integrity and mutual helpfulness which obviously exists among people on the purely economic

level of their relationships. The participants in these relationships are gainers from these conditions. A man who does not pay his debts promptly is deprived of his credit standing. A merchant who practices deceit and fraud runs the risk of losing his customers as well as of a jail sentence. The widely influential precepts of Poor Richard merely codified the lines of conduct which would yield the largest gain and the greatest security to the individuals of that time and place. The brief maxim, "Honesty is the best policy," would lose none of its meaning if reduced to "Honesty pays." What the individual is to do in regard to a particular economic issue is more of an accounting problem than an appeal to fixed principles of procedure.

The conception of ethical motivation herewith set forth does not preclude the potentialities of influences other than those which are purely materialistic. Our idealism still can draw its nourishment from the indisputable facts that human beings are subject to emotions and sentiments and that these are capable of cultivation and intelligent direction. Love, loyalty, sympathy, altruism, continue to be associated with ideals for which men strive. And yet, under the established conditions of private property and freedom of enterprise, conduct of an economic character is directed perforce by individual and material considerations.¹⁶ In a money economy appraisals and choices in this field are made in pecuniary

¹⁶ See the article by Paul H. Douglas, "The Reality of Non-Commercial Incentives in Economic Life" in *The Trend of Economics* (R. G. Tugwell, Ed.), for an interesting case study of non-pecuniary economic motivation. Professor Douglas' data are not adequate to permit generalizations broader than the mere statement that certain non-commercial incentives exist. It is not possible to argue that they operate widely—although it is manifest that they have large potentialities. It seems probable that the present institutional structure not only fails to establish goals which are free from material considerations but also actively blocks the exercise of the motives which Professor Douglas finds.

terms. Nor do we mean to imply that people are calculating machines which cast up dollars and cents totals before committing themselves to any decision of an economic nature. People tend to think only when and because they have to make decisions—and the complexities of life in our material culture force us to decide many issues. Money supplies a common denominator which facilitates computation. It seems probable therefore that we are more nearly rational in our economic conduct—especially in our productive conduct—than in any other department of our interests.

Perhaps a few typical instances may serve to clarify and substantiate the claim that, in the existing order of society, the moral phase of the social control of economic activity is a reflection of individualizing material influences. The corner grocer may have a sincere desire “to do the right thing” by his customers. But the fact that his competitor in the next block is able to cut prices by selling inferior merchandise under false pretenses may lead him to decide that honesty is not consonant with solvency, and force him to follow suit. A wage earner may be possessed of a powerful “instinct of workmanship” and may earnestly wish to give his best energies to his job. But a real or imagined prospect of finishing his work and being without employment, or a belief that his employer is treating him unfairly, probably will cause him to resort to ca’ canny or sabotage. The employer on his side may, because of altruistic motives, be strongly desirous of raising the wages or shortening the hours of his employees. But the prospect of incurring a deficit, or of giving a competitive advantage to a rival, is reason enough to prevent him from actually carrying out his wish. In each of these typical instances it is evident that *the good*, to the person concerned, consists in securing a gain or preventing a loss to himself. The indi-

vidual's conduct tends, in each case, to be directed by what seems to him good. It follows therefore that morality in economic relations, conceived as actual conduct rather than as guiding principles, is a reflection of motivating influences which are individualizing. In a money economy the aim of such conduct is to secure gains and to prevent losses of a pecuniary kind. It follows also that morality, conceived as social preferences, exerts a potent influence on economic conduct. The kind of preferment that people necessarily must seek is pecuniary preferment. This means that the conditions under which producers will tend to produce more and better goods and render more effectual service are simply and solely those in which it pays them to do so. And this brings us to the next division of this subject, the second of the two means by which a partial resolution of the economic anomaly may be effected.

The Trend of Industrial Processes

It is necessary to exercise extreme caution against an exaggerated conception of the conflict that exists between making goods and making money. Individual interest runs counter to social interest only at those frontiers where to make more goods will not result in an addition to the pecuniary gain of those who make the goods. It is not possible to state in terms of physical output at what point this frontier will be reached. Its nearness or remoteness varies among different enterprises and different times. Seasonal and cyclical circumstances of business affect its position, as do also random influences and long-time industrial and social trends. Of these several modifying factors, the most important to society is the long-time trend. Temporary ups and downs of production are disagreeable and undesirable. But the more significant consideration is whether the frontier of

conflict is steadily and permanently drawing nearer or being thrust farther away. Unquestionably, there are tendencies within the organization, technique, and relationships of productive establishments and industries themselves which may have one or the other of these effects. Unquestionably also, certain of these tendencies have as their consequence (immediately, at least) a restriction of output. Other tendencies—perhaps more fundamental ones—are causing restriction of output to become less marked.

The first of these two sets of tendencies—the restrictive ones—have been very ably presented by Professor Veblen. He commences with the entirely accurate thesis that those who own and control industry are engaged in making goods only as a means to making money. He concludes that the controllers of industry also are the controllers of technology and productive processes, and that the science and the art of making goods and rendering services are subordinate to the end of making money. All this seems sound and logical. But is it all of the story? We protest that it is not. Suppose (and it is true) that goods are made only when and because their production will result in a pecuniary gain to their producers. Suppose also that, as time goes on, it becomes increasingly necessary to make goods *in order to* secure the maximum pecuniary gain. The interest and the control described by Professor Veblen remain unchanged. Yet restriction of production becomes less marked. In the remainder of this study, we shall seek to demonstrate how and why, as time goes on, it is becoming increasingly necessary to make goods in order to make money.

One further caution against an exaggerated conception of either side of the case. Many things are neither as good nor as bad as they are depicted by their advocates

and their adversaries. There is no complete harmony between social and individual economic interests. Neither are they entirely in conflict with each other. It is said that a reader of *Punch*, the famous London journal of humor, once said to its editor, "*Punch* is not as funny as it used to be." "No," replied the editor, "it never was." History fails to record the peregrinations of Adam Smith's "invisible hand," or to yield any ecstatic account of Bastiat's "harmonies." Investigation of industry, past or present, reveals many influences which do not conform to Veblen's pattern of conflict.

The chapters which follow rest upon the following hypothesis: Everything which happens manifests itself in time as well as in space. In analyzing or describing the space area of social phenomena, the investigator deals with *conditions*. To study their time area, one must identify and evaluate *processes*. For many purposes processes through time are more important than immediate conditions. The fact that a pneumonia patient's temperature is at a certain height on a certain day is less significant than whether the trend of temperature is upward toward a crisis, or downward toward recovery. The scenery which meets the gaze of a traveler from the top of a hill may be beautiful and inspiring—but it is of less ultimate importance to him than his route and his destination. So with many economic problems. Most of the classical economists—as well as many of their contemporary followers—conceive the problems with which they deal as static, as existing only in space. Yet the methods of studying time processes have been ably demonstrated by such leaders in economic science as Malthus, Schmoller, Clark, and Veblen.

In the present chapter, we have dealt with the space area of a complex phenomenon which we have named the "economic anomaly." The discussion has been of con-

ditions, real and hypothetical. The remainder of this study will be devoted to the changes in the intensity and degree of the anomaly as they are occurring through time. We shall be concerned with conditions only because they are significant of processes. Our problem will be: What are the trends, tendencies, and potentialities, within the industrial system of to-day, which are serving to modify the economic anomaly?

Whatever degree of conflict exists between social and individual economic interests comes from the fact that producers also are sellers and buyers. The greatest convergence of buying and selling relationships to-day is to be found in manufacturing industries. It is by enterprises of this type that materials of all kinds are bought, workmen in all trades and of all degrees of skill are employed, equipment of all varieties is purchased, and use is made of the services and facilities afforded by financial and transportation companies, as well as by a multitude of other contributory functionaries. It is also by these establishments that almost all products designed for "final consumers" are processed and sold. The trends and tendencies with which we shall be dealing are not peculiar to manufacturing industries, but apply as well to transportation, and, to a lesser degree, to extractive industries—mining, agriculture, lumbering. It is in manufacturing industries, however, that the processes are most clearly manifest, and it is there that we shall examine them in this study. And also, while the same trends and tendencies exist among all industrial countries, it is in the United States—because of the stage that has been reached in its development, and also because of the industrial and commercial demoralization of post-war Europe—that they stand out most clearly. We shall therefore seek trends and tendencies existing within manufacturing industries in the United States

which are tending toward a modification of the economic anomaly.

In this chapter, we have sought to demonstrate that there is no inherent conflict between social interests in making goods and individual interests in making money. Such divergence as exists is due entirely to cultural arrangements. We have attempted to show that it is possible to narrow the field in which the anomaly operates by the passage and enforcement of laws. And finally, we have asserted that certain processes which exist in industry are steadily pushing back the frontier of conflict by making it increasingly necessary to make goods in order to make money. The next chapter will present a brief outline of American industrial development, and will serve as a setting for the trends discussed in the chapters which follow.

CHAPTER III

THE DEVELOPMENT OF AMERICAN INDUSTRY

AMERICA'S industrialization has become a leading theme, not only of historians, statisticians, and chamber of commerce orators, but also of poets, novelists, and playwrights. It is the essence of the new realism. No concoction of even the most vivid imagination can match it in sheer dramatic power. The last century of our history is a record of changes more profound and farther reaching than occurred during all the era of Rome's rise to power or in the thousand years between Rome's fall and the Turkish capture of Constantinople. The change process is of such complexity as not to be measurable in other than terms of general comparison. Even if a statistician were able to comprehend the process in its entirety, he never could express or describe it in empty numbers. The incessant use of superlatives in our contemporary periodicals fails in its purpose, and reduces readers to a state of neurotic apathy. "The greatest development of the age" is announced by the press. But most of us fail to become greatly excited, because we know by experience that even more marvelous developments will come next week, next month, and next year. Our emotions are satiated with marvels. We spend our lives among the host of modern wonders—factories, express trains, electrical contrivances, automatic presses, preventive medicine, five-day boats to Europe, refrigerated motion picture palaces,—even television, radio, and

transatlantic flights by airplane—and are more or less bored with them. Perhaps we are too close to it all, and too much a part of it, and do not live long enough to see it in a perspective which would yield appreciation. If the story could have been written a hundred years ago as a prediction, rather than to-day as a record, then indeed would people have been amazed—or have sternly rejected it as a product of devilish magic. We of to-day are accustomed to the situation, and merely accept it as it is, or as we think it is. We find in it no trace of magic. That which has caused it all is not physically visible—yet our blindness is not as great as Isaac's. The material manifestations of our civilization might appear superficially to be the work of a wizard or an alchemist, but the "invisible hand" which directed its creation we recognize at once as that of the business man. And its motivation we know to be almost entirely the gain incentive.

The central theme of cultural development in this country is one of rapid change from an agricultural to an industrial community. Alexander Hamilton, writing at the close of the eighteenth century, described the strip of Atlantic seaboard which then constituted the United States as "a vast scene of household manufacturing." A few mill wheels turned in the streams of the more populous regions. But industry, as we conceive it, was unborn and undreamed of. Hamilton, genius in statesmanship, and in business the leading "man of vision" of his generation, saw more clearly than others the potentialities to America of the new system of industry then taking its rise in England. There is as much of prophecy as of logic in his Report on Manufactures, which, as Secretary of the newly created Treasury of the United States, he addressed to Congress in 1791:

It is proper . . . to enumerate the principal circumstances from which it may be inferred that manufacturing establishments not only occasion a positive augmentation of the produce and revenue of the society, but that they contribute essentially to rendering them greater than they could possibly be without such establishments. These circumstances are:

1. The division of labor.
2. An extension of the use of machinery.
3. Additional employment to classes of the community not otherwise engaged in the business.
4. The promoting of immigration from foreign countries.
5. The furnishing of greater scope for the diversity of talents and dispositions which discriminate men from each other.
6. The affording of a more ample and various field for enterprise.
7. The creating, in some cases, of a new, and securing in all a more certain and steady demand for the surplus produce of the soil.¹

Hamilton's ambitions went unrealized during his lifetime. For the first thirty years of its political independence, the United States remained an economic dependency of England, selling her agricultural raw materials to English buyers, and importing the products of English manufacturers. Industrial competition with the mother country by American upstarts seemed unnecessary, undesirable, and futile. The years of isolation during the Long Embargo and the War of 1812 made possible the beginnings of an indigenous factory system. The threat of overwhelming competition at the close of the war and the resumption of friendly relations with England, led Congress, in 1816, to enact our first pro-

¹ The full text of this section of Hamilton's Report on Manufactures is given in Taussig, F. W., *Selected Readings in International Trade and Tariff Problems* (Ginn and Company, 1921), pages 454-479.

protective tariff law. Never was the infant industry argument more accurately and wisely employed. With the combination of great physical resources and rapidly increasing population which makes a growing market, and shielded from outside competitors by a screen of protective duties, the stage was set for the drama of American industry.

The action, however, was slow to get under way. Even the woolen and cotton industries, which were the first to attain a considerable size, were for many years unable to take the field from the household producers. Agriculture was predominant as a mode of living, and was long to remain so. Indeed, it was not until 1900 that the value added to goods by manufacture commenced to exceed the value of agricultural products. And not until 1920 did the persons gainfully employed in manufacturing establishments outnumber those engaged in agriculture. If it be remembered, however, that agriculture is the most ancient of settled occupations, and that the factory system in America is only about one hundred years old, it is evident that the comparisons given above do not adequately describe the amplitude of the change process. By 1840, the factory method of production was widely enough prevalent, and the variety of factory products was sufficiently great to warrant the statement that America's industrialization was definitely and irrevocably started. From this point, the process appears to have gathered momentum steadily. The most accurate general account of what has taken place may be secured by referring to the broader facts.

First, let us examine the changes in physical conditions of area and population of the United States. Table 1, on the following page, describes the process of growth and also the steady urban concentration which has accompanied the rise of manufacturing industry.

DEVELOPMENT OF AMERICAN INDUSTRY 55

TABLE 1. AREA AND POPULATION OF CONTINENTAL UNITED STATES ²

Census Year	Land Area (in thousands of square miles)	POPULATION			
		Number ³ (in thousands)	Per Square Mile	Per Cent Increase Over Preceding Census	Per Cent in Places of 8,000 Inhabitants or More
1790	868	3,929	4.5		3.3
1800	868	5,308	6.1	35.1	4.0
1810	1,686	7,240	4.3	36.4	4.9
1820	1,754	9,638	5.5	33.1	4.9
1830	1,754	12,866	7.3	33.5	6.7
1840	1,754	17,069	9.7	32.7	8.5
1850	2,944	23,192	7.9	35.9	12.5
1860	2,974	31,443	10.6	35.6	16.1
1870	2,974	39,818	13.4	26.6	20.9
1880	2,974	50,156	16.9	26.0	22.7
1890	2,974	62,948	21.2	25.5	29.0
1900	2,974	75,995	25.6	20.7	32.9
1910	2,974	91,972	30.9	21.0	38.7
1920	2,974	105,711	35.5	14.9	43.8

The comparative values of the total products of factories, farms, and mines have shifted since the middle of last century, as follows:

TABLE 2. PERCENTAGE DISTRIBUTION OF TOTAL OF VALUE ADDED BY MANUFACTURE, VALUE OF AGRICULTURAL PRODUCTS, AND VALUE OF MINERAL PRODUCTS ⁴

Census Year	Total Value	Value Added by Manufacture	Value of Agricultural Products	Value of Mineral Products
1850.....	100	26.5	71.5	1.9
1870.....	100	40.1	56.3	3.5
1899.....	100	46.7	45.6	7.7
1919.....	100	51.0	42.6	6.4

Of particular importance to the present problem are the growth in size and volume of output of manufacturing establishments, and the proportional changes in the

² Compiled from U. S. Bureau of the Census, *Fourteenth Census: Population, 1920*.

³ The census of 1870 was incomplete in the Southern States. The figure used here is the revised estimate.

⁴ Thorp, Willard L., *The Integration of Industrial Operation*, Census Monograph No. III (Government Printing Office, 1924), page 34.

ratios between the capital used, the number of workers, and the value of the products.

TABLE 3. SIZE OF MANUFACTURING ESTABLISHMENTS MEASURED IN TERMS OF CAPITAL, WAGE EARNERS, AND VALUE OF PRODUCT ⁵

Census Year	No. of Establishments ⁶	CAPITAL ⁷		WAGE EARNERS		VALUE OF PRODUCT	
		Total (in millions of dollars)	Average per Establishment (in dollars)	Total (in thousands)	Average per Establishment	Total (in millions of dollars)	Average per Establishment (in dollars)
1849	123,025	533	4,340	957	7.8	1,019	8,284
1869 ⁸	252,148	1,695	6,726	2,054	8.1	3,386	13,428
1889	355,405	6,525	18,380	4,251	12.0	9,372	26,371
1899	512,191	9,814	19,160	5,306	10.4	13,000	25,383
1899	207,514	8,975	43,357	4,713	22.7	11,407	54,969
1909	268,491	18,428	68,384	6,615	24.6	20,672	76,993
1919	290,105	44,467	153,334	9,096	31.4	62,418	215,157

Each of these series, taken separately, depicts one aspect of America's industrial growth. More significant facts are to be derived, however, from a comparison of the three series of per-establishment averages. The average investment of capital has increased more rapidly than either the average number of laborers or the average value of products. The average value of products also has made a larger gain than the average number of laborers. It appears, therefore, that the value of product per dollar of capital in use has declined greatly,

⁵ Table compiled from data contained in Bureau of the Census, *Biennial Census of Manufactures, 1921*, pages 13, 14.

⁶ Prior to the Census of 1900, hand and neighborhood industries were included in the enumeration of manufacturing establishments. Since 1900, they have been omitted. Both sets of figures are given in this table for the year 1899.

⁷ The accuracy of these data of capital employed in manufacturing is impaired by the fact that many concerns keep no capital accounts; the fact that various bases have been used for valuation—reproduction cost, original cost, capitalized earnings; the existence of watered stock in the capitalization of some concerns; etc. Yet while the figures themselves are subject to large error, the trend which they exhibit probably is a fairly accurate approximation.

⁸ Values given for the year 1869 are in terms of gold dollars—not in the depreciated paper currency of the time.

but that the value of product per laborer employed has increased steadily. This is, of course, only what is to be expected, since the added amounts of capital per laborer (existing in the form of more and better productive equipment) greatly enhance labor productivity. The two series, amount of capital and value of products, being expressed in pecuniary units, do not depict the actual proportional growth of industry in the physical sense, because they are affected by changes in the general level of prices. Yet after this error has been corrected, there remain the same general trends of relationship between the series.⁹

Another manifestation of increased production by manufacturing establishments is contained in the statistics of value added by manufacturing. These are as follows:

TABLE 4. VALUE ADDED BY MANUFACTURING: VARIOUS CENSUS YEARS ¹⁰

Year	Value Added by Manufacturing (In Millions of Dollars)
1849.....	464
1869.....	1,395
1889.....	4,210
1909.....	8,529
1919.....	24,809
1923.....	25,850

⁹ Thus, in Table 3, the influence of the depreciated currency of the post-Civil War period is eliminated by quoting values in terms of gold dollars. It is not possible to remove the influence of the rise in prices after 1914 by such a method, since the gold standard was maintained throughout the period. According to the index of general prices prepared by the Bureau of Labor Statistics, Department of Labor, prices were 1.93 times as high in 1919 as in 1914. Dividing the value of products as reported for 1919 by 1.93 results in a value product for 1919 of \$32,146,000,000 in terms of dollars "equivalent" in purchasing power to those of 1914. The value of all manufactured products in 1914, in terms of "actual" dollars of that year, was \$23,988,000,000. The value of products has risen further since 1919, reaching a total of \$38,818,000,000 (1914 "equivalent" dollars) in 1923. See Bureau of the Census, *Biennial Census of Manufactures, 1923*, page 13. For the reason that it includes the prices of agricultural products as well as those of manufactured goods, it is probable that the Bureau of Labor Statistics index number "over-corrects" the prices of the latter. The error, however, would not be great enough to affect our general conclusion here.

¹⁰ U. S. Bureau of the Census, *Biennial Census of Manufactures, 1923*, page 14.

Examination of the tendencies of the largest establishments also is significant in studying the growth of manufacturing industry. Unfortunately, we have no comparable data running back before 1904. Yet even since that year, a very definite trend toward concentration is to be observed. In 1904, there were 1,900 manufacturing establishments, the value of each of whose outputs exceeded \$1,000,000 per year. This was 0.9% of the total number of establishments. These plants employed 25.6% of all the wage earners engaged in manufacturing, and the value of their products was 38.9% of the total value of manufactures. In 1923, there were 10,326 such plants, constituting 5.2% of the total number. They employed 57.1% of the wage earners, and the value of their products was 66.4% of the total value of manufactures. The increase of the price level between 1904 and 1923 accounts for a part—but only a part—of this apparent industrial concentration.¹¹

Evidence of the increased use of power-driven equipment in manufacturing industries is afforded by statistics of the power facilities utilized. The primary power facilities used in 1904 had a total capacity of 12,855,000 primary horsepower. In 1923, their total capacity had increased to 33,094,000 primary horsepower, a gain of almost threefold in nineteen years.

A useful index of the growing complexity of manufacturing industry, and of the increasing variety of its products, is afforded by the records of the Bureau of Patents (Table 5, page 59).

The development of manufacturing industries in the United States has been closely allied to and dependent upon the growth of an adequate system of inland transportation. Numerous canals have been built, and inland

¹¹ Data from U. S. Bureau of Foreign and Domestic Commerce, *Statistical Abstract of the United States*, 1924, page 724.

TABLE 5. PATENTS AND DESIGNS ISSUED, BY DECADES: 1841-1920 ^{1 2}

<i>Period</i>	<i>No. of Patents</i>	<i>No. of Designs</i>
1841-1850.....	5,942	340
1851-1860.....	23,140	1,025
1861-1870.....	79,612	3,181
1871-1880.....	125,520	7,535
1881-1890.....	207,850	8,357
1891-1900.....	220,840	13,374
1901-1910.....	315,351	7,250
1911-1920.....	383,885	15,781

waterways have been widely utilized. The most important factor in the transportation system, however, has been the railroads—of which, in 1920, the United States possessed more than a third of the world's mileage. The increase of mileage in operation has been as follows:

TABLE 6. MILES OF RAILWAY LINE IN OPERATION: 1830-1920 ^{1 3}

<i>Year</i>	<i>Railway Mileage</i>
1830.....	23
1840.....	2,818
1850.....	9,021
1860.....	30,626
1870.....	52,922
1880.....	93,262
1890.....	167,191
1900.....	198,964
1910.....	249,992
1920.....	263,821

One other general trend, one which is in large part a derivative of those already set forth, remains to be examined. It is the growth of national wealth (Table 7, page 60).

If we take these figures at their face value, it appears that the national wealth has increased more than forty-fold, and that the value of the possessions of the "average individual" has grown almost tenfold, all in a period of seventy-two years—the span of a long lifetime.

^{1 2} Data from U. S. Bureau of Foreign and Domestic Commerce, *Statistical Abstract*, 1920, page 189; and 1924, page 725.

^{1 3} U. S. Bureau of Foreign and Domestic Commerce, *Statistical Abstract*, 1923.

TABLE 7. ESTIMATED NATIONAL WEALTH OF THE UNITED STATES ¹⁴

<i>Year</i>	<i>Total Wealth (In Millions of Dollars)</i>	<i>Per Capita Wealth (In Dollars)</i>
1850.....	7,136	308
1860.....	16,160	514
1870 (Gold basis).....	24,055	780
1880.....	43,642	870
1890.....	65,037	1,036
1900.....	88,517	1,165
1904.....	107,104	1,318
1912.....	186,300	1,820
1922.....	320,804	2,918

Nothing quite so remarkable actually has occurred. Prices were somewhat more than twice as high in 1922 as in 1850. A more accurate estimate of the increase of wealth, total and per capita, would be twenty and five fold respectively. Wealth in land constitutes a large part of each of the total estimates given. Increases in land values (other than those due to improvements) do not constitute any real additions to wealth in the physical sense. It seems probable, however, that the increase of land value has not been more rapid than that of the total value of other forms of wealth, and thus the given rates of wealth increase are not seriously impaired or invalidated by the fact.

To facilitate the interpretation of the facts of America's industrialization and the identification of the processes which tend toward a modification of the economic anomaly, the time between 1840 and the present may be divided into two periods, the first extending from 1840 to 1890, the second embracing the time following 1890. These two divisions of time will be treated separately.

America's Industrial Youth, 1840-1890

Enormous natural resources, while furnishing the solid foundation from which the American industrial system

¹⁴ U. S. Bureau of Foreign and Domestic Commerce, *Statistical Abstract*, 1924, page 271.

has risen, were none the less an influence which delayed the growth of manufactures in this country. The contiguous existence of large supplies of iron and coal, and an abundance of copper, petroleum, and land suited for raising cotton, grains, and livestock, were determining conditions of our economic development. Indeed, as regards mineral resources needed in manufacturing, we possess fairly adequate deposits of all except tin. Yet coal, petroleum, and the baser metals could not be extensively exploited until improved means of transporting them had been created. Without these materials, no highly developed system of factories could exist; and without a system of factories, there was no demand for the materials. The flywheel of industry stood almost at dead center. Hence its slow and hesitant start, and its failure to gather momentum until long after the industrial revolution was far advanced in England. Only one natural resource, the soil, was vigorously worked. Land was plentiful in the 1840's and '50's (there were about eight persons per square mile in 1850, as compared with approximately forty to-day) and easy to buy from the national government on very favorable terms. Settlement of the West was further expedited when, in 1861, the Homestead Act was passed. In fact, migration westward of people who aimed to enter agricultural pursuits, or to establish business concerns in the agricultural communities of the section, proceeded steadily throughout the nineteenth century. The gold discoveries of California and Cripple Creek attracted thousands more. Horace Greeley's famous advice to young men must have seemed a platitude to the people who were in the midst of the westward movement. It was thus that the exploitation of the leading natural resource—the land—positively impeded the process of industrialization in its early phases.

In spite of protective tariff measures, large quantities of articles manufactured abroad continued to be shipped to this country during the entire century. The United States was not old enough, populous enough, or sufficiently developed economically, to contain sums of capital adequate for large-scale industrialization. European countries, especially Great Britain, possessed much larger and better manufacturing resources. Another competitive disadvantage to American factory owners was the relatively high rate of wages prevailing in this country. Laborers possessed a high degree of independence; if they didn't choose to work for wages, they always could join some caravan moving westward, and there buy land from the government, or obtain title to it by virtue of merely settling on it. This is, of course, a chief reason why the inhuman conditions of employment which prevailed in industrialized England during the first half of the nineteenth century did not exist also in the United States. Then too, in spite of the fact that the population of the country was growing with unheard-of rapidity, this great number of people did not constitute a single market. Factories could cater only to a rather narrowly localized patronage, or, at most, to the people who lived near the coast, the canals, and the navigable waterways. Quite different, this, from the closely knit countries of Europe. Such were the circumstances which obtained in steadily diminishing degree through most of the last century, but which were most marked during the period of our industrial infancy—the time prior to 1860. And yet, the infant, feeble at birth, and hardly out of swaddling clothes before 1840, was entering upon a lusty youth, and was destined to attain gigantic proportions before the end of the century. The circumstances we have named only prevented it from growing as rapidly as it would have in their absence.

The difficulties with which American manufacturers

and business men were confronted were challenges which led men to tremendous achievements. On the foundation laid by the genius of Arkwright, Crompton, Watt, Stephenson, and the other pioneer inventors of machines, a multitude of ingenious contrivances were made, which facilitated the production of goods and greatly reduced the dependence of manufacturers on an unstable labor supply. This latter condition also was greatly modified by the constantly accelerated flow of immigrants from the old world to the new. Competing steamship lines transported them at very low rates. As time went on, these newcomers tended more and more to establish themselves in the industrial centers, and to seek employment in the factories. Transportation difficulties were met by the building of railroads, which, by 1860, had attained a spread of more than thirty thousand miles of main-line trackage.

The Civil War injected a powerful stimulus into the process of industrialization. Manufacturing and trade became more profitable than ever before. The former need for an organized market was met, to some extent, by the unification of the northern states for the purpose of waging war. The government itself became the largest purchaser of manufactured articles in the world, entering the market as a heavy buyer of munitions and supplies for its army and navy. The steady rise of the price level during and after the war period greatly increased the profitableness of business enterprise, while the far-sighted (or merely fortunate) men who borrowed money to build their establishments and were able, later on, to repay their debts in the depreciated national currency, thereby expedited the concentration of capital in industry. All other influences which condition industrial growth are secondary to the existence of a profitable market.

The close of the war, instead of ushering in a profound

industrial depression, as the more timid had feared, merely witnessed a speeding up of the process of industrialization. Almost before the smoke of battle had cleared away, new factories were in operation; mineral and timber resources were exploited with new vigor; great new railroad systems—some of them to span the continent—were projected; the business of financing these new enterprises became a powerful and important branch of activity. The government, while no longer so needy a customer, had at least become industrially-minded; grants, subsidies, privileges, were bestowed upon the thriving railroad, mining and manufacturing concerns, some by legislative enactment, others by sale or official favoritism. That the farmers of the country—who only a generation earlier were able to defeat the Second Bank of the United States—had been ousted from the seats of the mighty is evidenced by the constant succession of “agrarian movements” since the Granger demonstrations of the 1870’s. It was the day of the new capitalist and the “captain of industry.” Lured by the prospect of its profitable employment, enormous sums of capital came from Europe to the United States, where it was converted into railroads and factory equipment. But even more important was the rise of a new American caste, the industrial adventurers and “empire builders.” Armour, Carnegie, Clark, Cook, Gould, Harriman, Hill, Huntington, Morgan, Rockefeller, Vanderbilt, are names which appear prominently upon the roster of the new industrialists. These men, temperamental descendants of Alexander Hamilton, were the “men of vision” who were destined to execute Hamilton’s dream. The story of what this new caste did, and what their accomplishments have meant in the national economy, has been graphically told by two present-day historians.

Above all else, the new economic barons were organizers of men and materials—masters of the administrative art—who saw with penetrating eyes the wastes and crudities of the competitive system in industry and transportation. Possessed of a luminous imagination they could think imperially of world-spanning operations that lifted them above the petty moralities of the village-smith or of the corner-grocer. In coöperation with tireless workers in science and invention, they wrought marvels in large-scale production, bringing material comfort to millions of people who never could have wrung them barehanded from the hills and forests. “Two pounds of ironstone mined upon Lake Superior,” to use a single illustration, “and transported nine hundred miles to Pittsburgh; one pound and one-half of coal, mined and manufactured into coke, and transported to Pittsburgh; one-half pound of lime, mined and transported to Pittsburgh; a small amount of manganese ore mined in Virginia and brought to Pittsburgh—and these four pounds of materials manufactured into one pound of steel, for which the consumer pays one cent.” With natural pride did Andrew Carnegie, the recorder of this achievement, put it among the wonders of the world. Compared with the complicated Pittsburgh operations, the deed of the pyramid builders—who merely commanded under the lash armies of slaves to drag by brute force huge blocks of stone into one enormous pile—sink into banalities, inviting respect neither for the intelligence displayed nor for the object in view.

In four great provinces bound together by ever-constricting ties of federation—manufacturing, extractive industries, transportation, and finance—the leaders of business enterprise, sustained and assisted by a host of liegemen, marched from victory to victory in the decades that followed the triumph of Grant at Appomattox. Statistics but dimly shadow their progress. In 1860, just a little more than a billion dollars was invested in manufacturing and only 1,500,000 industrial wage earners were employed in the United States. In less than fifty years the capital had risen to more than twelve billions and the number of wage earners to 5,500,000. During

the same period, the value of manufactured products had leaped to fourteen billion dollars a year, fifteen times the total at the beginning of the epoch. The output of American iron and steel—that measure of modern power—was, in 1870, far below the tonnage of England or France; within twenty years the United States had outstripped them and was pouring from its forges more than one-third of the world's total annual supply. The iron crown, as Andrew Carnegie said, had been placed on the brow of Pennsylvania.

With a stride that astounded statisticians, the conquering hosts of business enterprise swept over the continent; twenty-five years after the death of Lincoln, America had become, in the quantity and value of her products, the first manufacturing nation of the world. What England had once accomplished in a hundred years, the United States had achieved in half the time.

In this development industry had moved swiftly through three stages. The little old-fashioned mill on the river's bank turned by a lumbering water wheel, marking the first step in machine manufacture, had given way to the immense plant driven by engines or turbines of gigantic power. Then in turn the isolated establishment under the ownership of a single master or a few masters had surrendered to the corporation. At the end of the century three-fourths of the manufactured products came from factories owned by associations of stockholders; in each great industry was a network of federated plants under corporate direction; by 1890 combination was the supreme concept of the industrial magnate. Oil products, iron, steel, copper, lead, sugar, coal, and other staples were then in the hands of huge organizations that constituted, if not monopolies, efficient masters of their respective fields. During the following decade, the work of affiliation went forward with feverish haste, culminating in the billion dollar United States Steel Corporation of 1901.¹⁵

Here was that old force, the profit motive, working in new ways its wonders to perform. It merely rose to meet

¹⁵ Beard, Charles A. and Mary R., *The Rise of American Civilization*. (Macmillan, 1927.) Vol. II, pages 175-177.

a new situation. The United States had become the largest single market in the world. Hemmed in as it was by protective tariffs, it contained no tariff barriers within itself. And it also was the most rapidly growing market ever known. The domestic manufacturers were hardly able to supply the goods needed to meet the domestic demand. The slogan of industry became, "Production at any cost!" And, as we have seen, production steadily rose. In the meantime, natural resources were being wasted with reckless prodigality, and extravagant inefficiency obtained in many establishments—all in the interests of getting the goods on the market.

Taken as a whole, the period from the close of the Civil War up to about the year 1890 was one in which market forces were comparatively simple. The tendency was for plants to operate at their maximum capacities because it paid their owners for them to do so. It is true, of course, that production was restricted somewhat by the pools and other predatory marketing arrangements of the time. It also is true that certain groups of laborers pursued tactics which made for a withholding of effort. Yet wage earners were not adequately organized for large-scale restriction. And under the pressure of steadily increasing capacity, there developed, toward the end of the period, a tendency toward cutthroat competitive methods, under which the limitations demanded by the earlier pooling agreements became as futile as the grandiloquent gesture of King Canute.

Under circumstances such as there, the frontier at which individual interests in making money conflicted with social interests in making goods must have been relatively remote. The period under discussion had its cyclical ups and downs—although these movements were intensified greatly (perhaps, to a large degree, caused)

by the unstable condition of the currency.¹⁶ And yet the general trend was toward making more and more goods for the sake of making more money.¹⁷ If it were possible to have a market in which the effective demand for goods consistently and perpetually increased more rapidly than the capacity for producing goods, the economic anomaly, as a general potentiality, would cease to exist.

America's Industrial Maturity: 1890 to the Present

It could not run on forever. Sooner or later the country's industrial capacity was bound to catch up with the market demand for goods—perhaps even to pass it. All evidences indicate that this is what actually occurred before the end of the century. The momentum gained by industrialization gave it a speed more rapid than that of market growth. In this brief sketch of the processes affecting America's industrialization, we have selected the year 1890 to represent the point at which the catching up took place. As a matter of fact, we cannot allocate it to any single year. Some industries caught up with their respective markets before 1890—others did not do so until somewhat later. And many entirely new manufactured articles, entering the market after 1890 (of which the automobile and the radio are prominent examples) have been demanded in enormous quantities. But about 1890 (perhaps more accurately throughout the two decades 1880-1900) important changes occurred in the American market and in American industry.

The physical market for goods did not continue to

¹⁶ Thorp, Willard L., *Business Annals* (National Bureau of Economic Research, Inc., 1926), has found a total of nine years of depression in the twenty-five years from 1865 to 1890.

¹⁷ A conflicting tendency existed in the waste of goods in the form of materials and in the inefficient methods which prevailed in many establishments. As time went on, however, this tendency probably diminished.

grow as fast proportionally as it formerly had. By 1890 there was no longer a frontier. The population, which had doubled each twenty-five years before 1890, continued to increase, but at a much lower ratio of progression. Railroad building, which reached its peak in the decade of the 1880's, had furnished a great demand for the products of the heavy steel and mechanical industries, as well as opening up markets for other products. After 1890, the rate of railroad construction entered a marked decline,¹⁸ both in actual miles constructed, and relatively to the growth of industry and population. This is evidenced by a comparison of railroad mileage with population at thirty-year intervals: In 1860, the ratio of railroad mileage to population was 1:1,014; in 1890, it was 1:376; in 1920, it was 1:400. Railroad lines are used more intensively to-day than they were in 1890;¹⁹ but as compared to industry and population, they actually are less extensive now than at the earlier date. While the domestic market has not grown as rapidly in physical terms since 1890 as it did in the period prior to that time, it has none the less increased greatly in the complexity and variety of its wants. The railroads, for example, while operating fewer miles of road in proportion to our population, are required by the market to furnish more Pullman, dining-car, and refrigerator-car service per person than formerly. There is a larger amount of purchasing power in the hands of the public. The standard of living has risen. Yet the market conditions of 1890 were no longer simple ones; they had come to involve new hazards to the participants in industry. A whole new set of processes developed in industry at

¹⁸ See Table 6, page 59 above.

¹⁹ Between 1890 and 1919, the number of cars, other than passenger cars, in use more than doubled, the volume of freight hauled increased from 640 million tons to 2,063 million tons, the average length of haul per ton of freight rose from 122.2 miles to 178.2 miles.

about this time, some of which were designed to restrict production, others of which constituted sincere attempts to make it pay to produce more goods. These hazards and the new processes they engendered were caused by the fact that the frontier of conflict between individual and social interests had grown closer. It had become more difficult to operate plants at maximum capacity because of the limits of profitableness in the market. Yet new forces were emerging which inevitably were to lead to a pushing back of the frontier.

These forces are manifest in the new set of industrial trends and tendencies. Among the multitude of processes, the most important in their bearing on the economic anomaly are listed below.

1. *Industrial Concentration.* Reference to Table 3 will show how rapid has been the increase in size of the physical and pecuniary constituents of the "average" manufacturing establishment—wage earners employed, capital invested, and value of products.³⁰ A part of this increase is due to the normal growth of individual establishments; another part is attributable to large new establishments which have been created. The trend also has been greatly influenced by the combination of already existing enterprises. The histories of such important industrial fields as oil, sugar, tobacco, steel, farm machinery, as well as many others less prominent, testify as to the reality of this influence. The chief reasons for the combination movement have been (a) the dangers of unlimited competition within a limited market; (b) the securities attendant upon integration; and (c) the productive economies of sheer size. Some informal combinations in the form of "pools" arose as early as the years immediately following the panic of 1873. Because of its

³⁰ Page 56 above.

"negative illegality,"²¹ and its prohibition to railroads by the Interstate Commerce Act of 1887, this type of arrangement was short lived. Between 1887 and 1897, the "trust" became the most prominent form of combination—although the Standard Oil Company experimented successfully with this device as early as 1879. As the courts commenced to make effective the various national and state anti-trust laws, a new form of organization, the holding company, arose and predominated during the period of greatest consolidation—the years 1897–1904. Since that time, there has been a steady growth of mergers, amalgamations, and the outright purchase of the property of one company by another company. But whatever different forms the combinations may have taken, the purposes were in all cases the same; to meet the conditions imposed by a limited market, and to gain the physical and pecuniary advantages of large-scale operation. The aim to monopolize, when present at all, was more a symptom of underlying market and operating conditions than a primary cause of combination.

2. *New Labor Organizations and Labor Attitudes.* As long as there had been a large quantity of land which might be secured from the national government at low prices, or for nothing, and as long as the demand for industrial workers was great, nothing which can be called a labor "movement" developed in this country. The independence of the wage earner, and the very fair prospect of his being able to have a shop or a business of his own at some time, was not conducive to the growth of class consciousness. In America, "the land of opportunity," the individual's interests were served best by individual efforts. But the dependence of the worker on

²¹ That is to say, pooling agreements could not be enforced by law, and thus there was no power to prevent the parties from violating the agreement.

his job was steadily growing, a condition which all the coöperative policies of the Knights of Labor, the ultimate promises of Marxian socialism, the social ideals of anarchism, and the opportunist tactics of syndicalism, were unable to meet. Trade-unionism, which had collective bargaining as its central purpose, thrived and reached national dimensions. The highly specialized and coöordinated American Federation of Labor was created, and after a short struggle overcame the opposition of the benevolent but ineffectual Knights of Labor. More recently, the trade-union movement has been subjected to competition by industrial unionism—which has the same ends in view but uses different methods of attaining them. Spurred on by a growing class consciousness, labor organizations tend to use whatever methods, combative or conciliatory, will achieve their major objectives: security in employment, high wages, short working hours. Whether trade-unionism or industrial unionism will become dominant in the future will depend on which type best meets the demands of wage earners in the new industrial system. Perhaps, because of the different circumstances of various groups of laborers, there will continue to be a use for both types.²²

3. *The New Sciences of Industry and Business.* The judgments of industrialists and business man which gave direction to the operation of enterprises were, during our industrial youth, empirically derived from broad observation, or based upon prevailing rules of thumb. As manufacturing processes came to operate on a larger scale, became more highly mechanized and more complicated, and as marketing the output of goods became more difficult, precise and flexible techniques of plant and business management became a pressing need. To meet this

²² Probably the best complete description of the transition outlined here is Commons and others, *History of Labour in the United States* (Macmillan, 1926). Volume II, pages 269-520.

need, a host of operating standards, based on objective and quantitative studies, had to be established. Pioneer work in this direction was done by Frederick W. Taylor and his associates in the "scientific management movement" as early as the 1880's. The peak of the movement seems not yet to have been reached. The enormous and rapid growth of industrial science is evidenced by the increase which has occurred in the number and size of technological schools. The rise of a technique of business may be measured by the curricular developments in collegiate schools of business since the creation of the Wharton School of Commerce, Finance, and Accounts (the first of its kind) at the University of Pennsylvania in 1881.

Ascertaining what the pertinent facts are, finding them, and analyzing them, constitute the procedure in present-day formulation of business judgments. Of the various methods of measurement and fact finding which are in wide use, accounting is of particular importance. Cost accounting, while of very recent origin, has become of primary significance to the operation of an enterprise. The increasing pressure of fixed charges is a chief cause of the need for the kind of differentiation afforded by cost accounting.

4. *The New Methods of Marketing.* Difficulties involved in selling the products of large establishments have given rise to unprecedented diversity and complexity of marketing methods. The old system was one in which manufacturers sold to wholesalers, wholesalers to retailers, retailers to "consumers." To-day, this orderly process has been broken down; mail-order houses, chain stores, and factory-to-consumer selling have removed various steps from the conventional progression. Goods are given standing in the market by virtue of brands which they bear. In those cases in which the old

methods of distributing commodities continue to be employed—as is generally the case, for example, of drugs, hardware, and clothing—manufacturers go entirely around jobbers, wholesalers and retailers to obtain a “grip upon the consumer.” This is done chiefly by means of extensive advertising. This procedure is almost entirely a development of the last half century. We hear frequently of transactions in which brands or trade-marks—only designs printed on paper, but thickly crusted with the highly valuable attribute of “good will”—change hands at fabulous prices. Marketing managers spend their energies in trying to break down the barrier of “sales resistance.”²²

5. *The New Associative and Coöperative Business Ethics.* In earlier times, it was the custom for enterprises catering to the same market demand to engage in fierce and exhausting competition. More recently, there has been a tendency toward the recognition of common interests and the coöperative solution of mutual problems. Trade associations, although in some instances probably designed as substitutes for monopoly, have served as the chief medium for this coöperation. The toll taken by intense competition within an industrial field was so great as to endanger an entire industry. The conditions leading up to the formation of our largest trusts (e.g., steel, oil, tobacco, sugar) are significant. Competition is changing from a struggle between different producers in a single field to one between organized groups of producers in different fields. The face brick manufacturers present a solid front to the lumber manufacturers and the cement manufacturers. The woolen industry competes with the silk industry and both compete with the cotton industry. Between enterprises which are com-

²² A very complete outline of “The Forces Behind Modern Market Structures” is given by Marshall, L. C., *Business Administration* (The University of Chicago Press, 1921), pages 256-262.

plementary, mutually helpful agreements tend to exist. Arbitration is coming to play a larger part in the settlement of disputes and misunderstandings between establishments.

6. *Imperialism.* Historians usually place the beginnings of the new imperialism in the decades of the 80's and 90's. Although the United States did not participate in its early phases, it appears probable that industrial and business conditions in the United States were influences which contributed to the imperialistic movement. As long as there was a market in the United States for much of the "surplus" production of Europe, and a profitable field for the investment of foreign capital, there was little economic need for European countries to extend their political hold over backward peoples. The pressing demand for markets and for places where capital might safely and profitably be invested were basic causes of economic and political imperialism.

7. *The Practice of "Dumping."* The custom of selling goods abroad at lower prices than those prevailing in domestic markets probably is much older than the factory system of production.²⁴ It is a device which lends itself well to opportunistic marketing methods. In former times, it appears to have been used most frequently as a preventive against a temporary "spoiling" of the home market, or as an expedient for harassing foreign competitors. Only recently has the practice become systematic, and a common element of commercial policy. German manufacturers assumed the lead in this development, but other industrial nations were quick to follow. Generated under the pressure of enormous outputs of goods in limited markets, and given force by systems of protective tariffs, dumping has come to be a recognized

²⁴ For example, Adam Smith, *Wealth of Nations*, Book IV, Chapter V, refers to predatory dumping.

component of international trade. In regard to our own country, one investigator finds that "export dumping on a continued and systematic scale has been a common practice of American manufacturers since at least the late eighties of the last century."²⁵

All of these developments are ways in which the participants in industry in the United States have adapted themselves and adjusted their policies to the conditions of a new economic environment. Taken together, they are ways of making more money for the persons concerned. Most of them, also, are ways of making more goods. The processes of growth in size of industrial establishments, of change in the internal arrangements of establishments, of changing relationships between establishments, of trends in costs of production, are tending steadily to thrust back the frontier at which individual interests in making money conflict with social interests in making goods. The chapters which follow will attempt to demonstrate how and why these processes are bringing this result.

²⁵ Viner, Jacob, *Dumping a Problem in International Trade* (University of Chicago Press, 1923), page 80. See this book, pages 35-93, for an analysis of the prevalence of dumping before and after 1890.

CHAPTER IV

THE GROWTH IN SIZE AND SCOPE OF INDUSTRIAL UNITS

THE physical arrangements of any productive enterprise and the nature of the processes in which it engages are fixed according to the determinate interests of whatever person or group has authority over it. This obviously is true in any state of society or of economic development. Independent craftsmen, the lords of medieval manors, the fathers of primitive households, the managers of modern factories: all formulate policies concerning their respective enterprises. The important difference between the judgments of modern industrialists and those of persons operating at some other times and under some other conditions is that the former are concerned primarily with questions of pecuniary gain and only secondarily with questions of physical output. Those who control an industrial enterprise are, it is true, invested with only a limited power and usually are unable to create conditions ideal for their purposes. Thus the bargaining strength of a trade-union or the restrictions imposed by a syndicate of bankers may prevent the controllers of an enterprise from attaining their objectives in any complete or ultimate sense. Within the limits of their power, however, they do the best they can. It is through adaptations and compromises between the purposes of those who control policies and the external influences with which they have to contend that the physical adjustments and size of manufacturing plants are determined.

As regards the size of factories, the judgments of those who control the enterprises are influenced by—but superior to—the opinions of qualified technologists. An engineer often is able to design a plant of such capacity that it will turn out a product with the greatest possible efficiency of power and other physical resources. Such a project comes validly within the province of the technologist. The acceptance and carrying out of the plan, however, depend upon its pecuniary expediency as determined by whoever has control of policies. Business judgments are affected no more by ratios of physical productive elements than by ratios obtaining between wage and interest rates, rents, marketing differentials, overhead costs, and alternative investments. The mechanics of the engineer is tested by the arithmetic of the accountant. The result usually is an effort to adapt technological efficiency to pecuniary expediency. An attempt is made to construct a plant of a size which will be most efficient physically within the limits imposed by the business situation. Its capacity for turning out goods tends to be fixed at a point between “subnormal” and “supernormal” market requirements. This point may not itself be one which exactly meets the conditions of a “normal” market. For example: a manufacturing establishment catering to a fluctuating market and possessed of some natural or social advantage which causes its profits to be higher than average, may find it advantageous, if interest rates are low and labor conditions favorable, to have several units of capacity which ordinarily are not utilized. But if interest rates are high and the difficulties in the way of getting more laborers or laying off laborers are great, it may be preferable to have very little capacity that does not promise to be in constant use. Another example: other things being equal, a concern whose costs of production consist largely of overhead or fixed charges is

less inclined (or able) to maintain capacity in excess of ordinary needs than one whose costs are principally direct or variable.

The size of an entire industry, measured by its output, is regulated by the demand for its product. The physical size of the market and the willingness and ability of the people to buy are the determinants. In most instances this does not mean, of course, that mere physical limits or "natural" demands give the industry its size. Producers may cultivate their markets as intensively as the prospective profits warrant—e.g., show how an automatic sprinkler system pays returns by reducing insurance rates, or make the public "soap conscious." Yet, in the end, the size of an industry is regulated by the demand for its product. This condition also has an influence on the size of single plants within an industry, but it is not a completely determining one—unless the establishment chances to be a monopoly. A manufacturer of automatic sprinklers, for example, may buy out some of his erstwhile competitors and thus create a larger single enterprise than formerly existed. Or a producer of soap may be able to convince the soap-using public that his soap is preferable to any other because of its germicidal quality or because it floats, and thus expand his business regardless of the generic demand for soap. In these ways, as well as others, an individual establishment may increase in size even though the industry is standing still or growing smaller.

In the preceding chapter it was shown that the average size of manufacturing establishments in the United States has steadily increased, both absolutely and in proportion to the population. This generalization, however, does not tell the whole truth and positively hides important facts. The size of some establishments has increased enormously; that of others has declined. The "average"

women's clothing factory was smaller in 1919 than in 1906. The same is true of "average" establishments producing carriages and wagons, marble and stone products, men's clothing, and various other commodities. During the same period, and extending back for several decades before it, there was a consistent increase in the average size of establishments engaged in producing salt, manufactured ice, beet sugar, meat, textiles of cotton, wool and silk, pig iron, steel and iron manufactures, lumber, leather products, boots and shoes, petroleum products, coke, fertilizer, automobiles, and numerous other commodities.¹

It is pertinent also to observe that a very uneven rate of growth obtains among different establishments in the same industry, even though the average size for the entire industry has increased greatly. Shoe manufacturing is an example. Dr. Thorp found that the average number of employees in boot and shoe factories increased from 57 in 1879 to 146 in 1919 (a gain of 156%) and that the average number of pairs produced per establishment increased from 64,053 to 228,589 (a gain of 257%).² Yet many shoe factories remained small throughout the period. The finest grades of shoes are made in the small, personally superintended, little-mechanized shops such as those in Haverhill, Brooklyn, and Newark. The cheaper grades are produced in such enormous capitalistic factories as those in St. Louis, Brockton, and Manchester.³ As the arts of making shoes are at present constituted, the finest grades of shoes can be made only under the conditions of relatively small-scale operation; the poorer grades can be made for sale at considerably lower prices only in relatively large, highly mechanized fac-

¹ Thorp, Willard L., *The Integration of Industrial Operation*, Census Monograph No. III (Bureau of Census, 1924). The statistics of increase or decline in average size of establishments are given on pages 46-86.

² *Ibid.*, page 64.

³ Cf. Dewing, Arthur S., *The Financial Policy of Corporations* (Ronald Press, revised edition, 1926), page 648.

tories in which labor costs per pair are comparatively low. The gain in average number of pairs per establishment, however, indicates that a constantly increasing proportion of the shoes produced are made under the conditions of large-scale operation. Taking into account the technological and pecuniary circumstances of the industry, a valid inference appears to be that there is a tendency toward operations on a larger scale in almost all establishments producing shoes.⁴

This trend toward concentration of production in large factories appears to obtain in most fields of manufacturing industry—although this generalization must be narrowed sufficiently to admit of the exceptions and deviations indicated above. The very rapid increase in number and in relative importance of large establishments (those the annual value of whose products amounts to \$1,000,000 or more) was reviewed in the preceding chapter.

Of the several sets of reasons which together account for this high degree of concentration, the first is purely physical and technological. For the primary one of these reasons Adam Smith has supplied the formula: "The greatest improvement in the productive powers of labor, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labor."⁵ Then, in a famous passage, Smith describes the way in which the manufacture of pins, when the eighteen separate operations involved in pin making are divided among skilled

⁴ In the case of shoe manufacturing it is to be observed that the processes of concentration and technological advance are hampered by what may be called "artificial" restrictions. It is probable that the existence of a patent monopoly in the shoe machinery industry has served to hinder large-scale operations in the manufacture of shoes. Cf. Jones, Eliot, *The Trust Problem in the United States* (Macmillan, 1921), pages 165-185.

⁵ *The Wealth of Nations*, Book I, Chapter I.

operators working together gives rise to a product several hundred or several thousand times as large as would be possible if each man worked separately and independently. The greater the division of labor, the larger the productive capacity of the enterprise. As machines come to perform a larger and larger proportion of the "labor," the division of labor grows constantly more minute and more elaborate—thus increasing still further the productive capacity of the plant. In the physical process of production there always is a limit—determined by the prevailing state of the industrial arts—beyond which division of labor cannot be carried. Thus in Adam Smith's time the making of pins could not be divided into more than eighteen separate operations.⁶ Yet from the standpoint of administration it may be possible to secure still greater division of managerial labor or marketing labor, or a more effective utilization of plant or power, by having a number of productive units within the establishment. Adam Smith's pin factory, for instance, might have effected further divisions of labor by having several pin-making units, each one containing all of the specialists necessary to the performance of the eighteen operations.

A second physical and technological basis for the tendency of manufacturing plants to become larger comes from the use of mechanically generated power. A power plant (e.g., a steam engine) may easily be of such small size as to be inefficient for driving machines and inordinately expensive to maintain and operate. Imagine, for example, a power plant capable of driving a single wood-lathe. It would cost more to install, in proportion to its power capacity, than a plant which would drive twenty such lathes. It also would have a larger proportional

⁶ The limit may actually have been twenty-five in some factories. See Cannan's edition of *The Wealth of Nations*, page 6, note.

friction to overcome and would consume more fuel per unit of power delivered. There would be little difference in the time and trouble of firing, oiling, cleaning, and repairing the small plant or the larger one. The most efficient one-man power unit is the largest that can be tended with a reasonable application of one man's efforts. Beyond this point division of labor becomes possible. One man is a stationary engineer, another is a fireman, others, perhaps, are oilers, wipers, etc. Up to the point at which a further division of labor is not possible—where further enlargement merely multiplies the number of functionaries without increasing the number of functions—such a development makes for increased efficiency of the power plant *per se*. Beyond this point still greater efficiency often is possible by the use of various labor saving contrivances which are applicable only to very large power plants, as, for example, mechanical stokers. The specific conditions outlined above are obviated, of course, in cases where the power used by the factory is furnished by motors which are propelled by purchased electric current. But even here greater efficiency and economy can be secured from a large motor than from a small one. A 1,000 horse-power motor is not ten times as costly to build or to buy as one of 100 horse-power. Neither is its expense of installation, wiring, repairing, or upkeep ten times as great. Nor does it have ten times as much dead weight or friction to overcome. The greater economy of using larger quantities of electrical current is made evident by the preferential rates given to large users by power companies. Of course there always are limits beyond which further enlargement of a power plant would result in less rather than greater efficiency and economy. One such limit is set by the immediate and prospective market for the products of the factory.

Another is established by the prevailing technology.⁷ There is evidence, however, that the size of power plants in actual use by manufacturing concerns is steadily growing. In 1914 the number of establishments reporting their power facilities to the Bureau of the Census was 202,528. They reported a total of 22,291,000 primary horse-power, or an average of 110 horse-power per establishment. In 1924 there were 173,471 plants which reported 33,094,000 primary horse-power, or an average of 191 horse-power per establishment.⁸

The relation of physical size to technological efficiency might be elaborated indefinitely. A factory building

⁷ Clark, J. Maurice, *Economics of Overhead Costs*, pages 113-118, discusses very thoroughly the physical economies of large mechanical units. In regard to influences which restrict their growth, Professor Clark says (p. 117): "There are some mechanical features which tend to limit the size of single units—chiefly the fact that repairs, breakdowns, and fluctuations of output can be more economically handled if there are several units, so that all the eggs are not in one basket. Then when one unit is idle the others will work at full capacity and with no loss of efficiency." This clearly is true in regard to "fluctuations of output." It is possible, for example, for ice factories to maintain two or more separate "tanks," each operated by separate ice machines, each machine in turn driven by separate power units. This permits the ice factory most economically to adjust its total output to the season of the year. As regards "repairs" and "breakdowns" it is significant that many manufacturers have chosen to duplicate certain items of key equipment for the sake of such emergencies, and to have one set idle all the time, rather than to lose the advantage of large size by having a plurality of smaller units. It appears also that a great deal of the actual breaking up of total operations into unit elements is being done through the use of plural electric motors which are driven by power generated within the establishment itself. So far as primary power is concerned, it remains, in such cases, a single unit for the entire plant. The *Statistical Abstract of the United States*, 1924 (page 725) reports 616,427 such motors in use in manufacturing plants. Their total horse-power is 8,822,751. This compares with 321,323 motors with 4,938,530 horse-power in 1914. But even where more than one unit is used, Professor Clark concludes: "In such cases there is a further gain to be had by a plant whose size permits it to have units large enough for maximum efficiency and enough of them for flexibility besides. So this fact makes for larger aggregate plants as often as it makes for smaller unit elements."

⁸ Department of Commerce, Bureau of Foreign and Domestic Commerce, *Statistical Abstract of the United States*, 1925, page 725.

which contains four acres of floor space can be constructed out of less materials and with less labor than four similar buildings which each contains one acre of floor space—even after providing for equally good ventilation and natural lighting. Nor will its heating and artificial lighting be four times as expensive. A drive-shaft which is twice as strong as another will be less than twice as heavy and will have less than twice as much friction surface in its bearings. Such instances can be multiplied. The same limiting influences which work against the indefinite increase in size of power plants also operate in these cases.

Another set of reasons for the increasing size of manufacturing establishments arises from purely pecuniary motives. It already has been indicated, at an earlier point in the present chapter, that these motives express themselves in judgments which are influenced by, but superior to, matters of technological efficiency. Technological standards relate to proportionality of productive factors—to tendencies toward increasing returns or diminishing returns in physical output. Business judgments are concerned with proportionality of costs and prices, with potentialities of increasing or decreasing costs per unit of product and of rising or falling prices. Dr. Thorp, after a wide investigation of the tendencies toward large-scale production in manufacturing industries, offers the following set of pecuniary reasons for concentration. It is to be observed that all of these reasons relate to costs of production and none of them to selling prices.

A.—*Economies in Production.*

1. The materials required, as well as fuel and electric power, can usually be obtained more cheaply if purchased in large quantities. In addition large purchasers secure more

ready attention and more careful consideration from the sellers.

2. The labor force may be more advantageously utilized, since the processes can be divided, resulting in saving due to division and specialization of labor.

3. The plant and equipment may be more advantageously utilized. The demand for products will be more exactly forecast and therefore there need not result slack and rush periods of work. According to figures collected by the National Bureau of Economic Research, however, the large enterprises showed greatest variation in activity from 1919 to 1922.*

4. The materials may be more effectively utilized, either by by-product manufacture or by disposing of waste in bulk.

5. Standardization can be more easily applied, resulting in better coördination within the process.

6. Research and development through investigative agencies may be carried on at less cost per unit of output and may result in a saving in the technical processes of the industry.

B.—*Economies in Marketing.*

1. Transportation may be done in greater bulk, resulting in a saving per unit transported.

2. Advertising costs will represent a smaller burden on each unit of output, although the amount of advertising may actually be increased.

3. The selling force required will not increase in the ratio in which the sales increase, therefore resulting in less cost per unit of product.

4. Distributing and selling agencies may be maintained.

5. The value of good will and of trade-marks and designs will increase with the volume of business.

C.—*Economies in Management.*

1. The overhead cost per unit of product, particularly the fixed charges, will not increase proportionately to the production.

* *Employment, Hours and Earnings in Prosperity and Depression*, National Bureau of Economic Research, 1923.

2. Better management can be afforded, with skilled heads for the different departments and branches. This factor is somewhat offset by the greater impersonality of large concerns.

3. Cost accounting, production standards, etc., may be introduced at less cost per unit of product.

D.—*Economies in Financial Administration.*

1. Borrowings can be made at cheaper rates as a result both of larger issues of bonds and of better security.

2. The amount of risk taken will be less because of the pooling of profits and losses, the greater ability to study outside market conditions, and the more able administration.

3. Greater financial resources will be available in case of depression or business strain.¹⁰

The above list is an adequate summary of the pecuniary advantages of large-scale production so far as they relate to costs of operation. Another set of advantages which are not mentioned, however, are those which relate to prices. The desire to eliminate competition and thus to exercise control over market prices was the principal drive behind the various phases of the "trust" movement. This influence has been an obvious one in industrial concentration. It may justly be argued that the existence of trusts is one of the most striking manifestations of the economic anomaly. The tendency of concerns exercising complete or partial monopoly control to restrict output will be discussed at later points in this study.¹¹ It is probable that the number of single establishments, or groups of establishments united by ownership, which can accurately be described as "combinations in restraint of trade" is not large. Dr. Thorp found in regard to such establishments and groups that "for each such combination there are hundreds of other combinations which make no pretense of monopolistic

¹⁰ Thorp, Willard L., *op. cit.*, pages 86-88.

¹¹ Pages 195, 199, 233-235.

operations. Industrial combinations are to be numbered not by tens but by thousands. However, the celebrity of the few has quite overshadowed the significance of the many."¹² This testimony supports the opinion that the desire for control of market prices has been no more potent an influence toward industrial concentration than have operating economies.

The very conditions under which these operating economies are achieved appear to be those in which the productive capacity of the establishment is most thoroughly utilized. Postponing until the next chapter the question of whether plant capacity actually is tending to be more completely utilized, we may well consider here certain aspects of production which are directly related to the element of size of the establishment. As plants become larger in size, the effort to make money gives rise to the making of more goods in certain specific ways not directly connected with or dependent upon the completeness with which capacity is utilized. The most evident of these tendencies are:

1. The integration of productive processes within a single establishment reduces restrictive forces which otherwise might be applied to the enterprise by contributory producers. A manufacturing plant must buy all of the materials, services, and facilities which it needs and does not itself produce. Its dependence on others for elements essential to its operation—as for example, materials or power—is a grave danger to both the profitableness and the productiveness of the business. A shut-down for any cause by one or more of the contributory agencies may force the establishment itself to cease operations; if one of the contributory agencies merely takes advantage of a strategic opportunity to charge exorbitant prices for its goods or services, or is

¹² Thorp, Willard L., *op cit.*, page 17.

temporarily unable to meet the requirements of the establishment, the latter may be severely crippled. It is equally true, of course, that a manufacturing concern must be assured of a stable market for whatever goods or services or facilities it may produce. Such conditions have led, in many fields of manufacturing industry, to a high degree of integration within single plants—as well as to combinations of complementary plants along vertical lines. Mr. Hobson cites the textile industries as examples of this trend.¹³ In woolen factories the sequential processes of sorting and cleaning, carding or combing, spinning, weaving, fulling, dyeing, and finishing, each of which formerly was done by a separate and independent establishment, often are combined to-day under a single roof. The same tendency exists in the American automobile industry. Only a few years ago many automobile factories were mere assembling plants which purchased almost all of the parts they used—motors, axles, wheels, bodies, crank shafts, gears, etc.—from other concerns which specialized in the making of certain parts. To-day most automobile factories manufacture a large proportion of the constituents of a complete car. It is only such parts as require entirely different processes and techniques and which have been standardized to a high degree, such as tires, gauges, and clocks, that generally are bought from outside concerns. The Ford Motor Company even manufactures the plate glass for its windshields and enclosed bodies. It is true, of course, that this very integration of processes is one influence which makes establishments large. It is equally true, however, that an automobile factory, or any other type of industrial plant, must need a large supply of particular materials before it can undertake economically

¹³ Hobson, John A., *The Evolution of Modern Capitalism* (The Walter Scott Publishing Co., Ltd., London, Revised Edition, 1926), page 143.

to produce them for itself. The development of mechanical serialization and continuous processes (which will be described in the chapter following) facilitates the trend toward integration. The combination of processes in a modern steel rolling mill is illustrative. It appears that this integrative tendency of large establishments makes for larger production than would occur in its absence.

2. The utilization of by-products by large plants makes for increased production both because of the by-products themselves and because their fabrication enables reduction of prices of major products. An oil refinery is an extreme example but illustrates the principle. A small refinery might be able to make a very good grade of gasoline, but probably would waste the residue of materials. The ability of a large refinery economically to manufacture, handle, and market lubricating oils, wax, asphalt, etc., causes an increased output of these articles and also probably a larger production of gasoline—since the costs of the major products are reduced by the gains from the by-products, and selling prices tend to be lower than they otherwise would. The famous low costs of the Ford Motor Company which enable it to sell its cars at extremely low prices are due in part to the completeness with which it utilizes the by-products incident to the manufacture of automobiles.¹⁴ A comparison between large meat packing plants and small slaughterhouses would furnish another striking illustration of this condition. It is important to observe also that the joint production of several entirely different articles out of one material or one process—when these articles are by nature distinct and cannot be merged into one another—makes it possible for a favorable market for one of them to

¹⁴ In spite of great efforts to avoid having anything to reclaim, the savings accomplished by the salvage department of the Ford Motor Company amount to \$20,000,000 annually. See Ford, Henry, *To-day and To-morrow* (Doubleday Page, 1926), pages 89-98.

induce the production of all of them. A packing plant is an example. Leather, fertilizer, glue, various grades of beef, and several other marketable articles are made from the carcass of a single steer. If the manager of a packing plant is anxious to turn out a large quantity of hides in order to take advantage of a particularly favorable market, he can do it only by producing all of the other products as well as the hides. Nor can he turn out porterhouse steaks without also turning out chuck roasts. Likewise a cottonseed oil mill cannot make oil without also making cottonseed cake. The same conditions apply to the large petroleum refinery and its products—but with one difference: within narrow limits one petroleum product may be merged into another. In the “cracking” process it usually is possible to make a somewhat larger or somewhat smaller proportion of gasoline, or of kerosene, or of lubricating oil, out of the run. It is only when the direct costs of making and handling a by-product are greater than its selling price that a manufacturing concern is warranted in wasting it or failing to produce it. These direct costs—which might be enormous to a small plant—tend to become smaller as the plant attains a larger size and a larger scale of operation.

3. The greater productiveness due to large-scale manufacturing methods is achieved in some plants by a diversification of products which involve similar techniques, or are made from the same materials, or can be sold to the same customers. Thus a manufacturer of men’s shirts may find that his material and selling costs will be reduced, and the mechanical efficiency of his plant enhanced, if he also makes a line of collars and underwear. A modified condition of joint production is reached in this manner, but it is immediately apparent that it differs greatly from the circumstances involved in the making of by-products. There is no question, in this

instance, of wasting or salvaging a residue of materials. Collars and underwear are in no sense by-products of a shirt factory (although it is true that some saving of materials may be effected by the different shapes which can be cut from the same cloth). Still further marketing economy and greater mechanical efficiency may be realized by our shirt, collar, and underwear manufacturer if he adds still other allied commodities, as for example, ties, hose, and handkerchiefs, to his products. In the same way a company making nautical instruments may secure the advantages of larger operations by adding the manufacture of clocks and various meters and gauges to its functions. Or a pickle factory may diversify its output until it makes fifty-seven varieties of food products. It is evident that such arrangements as have been described make for more complete utilization of the establishment's total facilities—a matter which we are not directly concerned with at this point. It also appears, however, that these are ways in which plants which otherwise would tend to remain small are attaining larger size and—by the very process of enlargement—the greater productive efficiencies which make for larger outputs of goods.

4. On the side of technique and mechanical facilities of production, large establishments contain within themselves the germs of still greater size. Only a large industrial unit can afford to engage in the experimentation and research which give rise to better methods of making goods. This remains true even if Professor Veblen's claim that the business man dominates the technologist be granted. The larger an establishment is, the better able and more eager it ordinarily is to use improved productive equipment or methods. The United States Steel Corporation, for example, never could have developed or have afforded to adopt many of the refinements which

have given it its enormous productive capacity if it had not already been large before it brought them into use. In this way large-scale operations contribute cumulatively to material production. The method and motivation of technological advance will be described in the chapter which follows. It is important to observe here, however, that as industrial plants become larger they increase in their ability to adopt better means of producing goods.

To this point in the present chapter an attempt has been made to demonstrate two related developments in American industry: first, how and why industrial plants are growing larger, and second, how and why increased size of establishments is making for steadily enhanced outputs of goods and services. It is clear that both of these trends are regulated by the pecuniary interests of those who control the establishments' policies. As regards the future trend of industrial growth, it seems probable that the maximum and ultimately desirable limits of size have not yet been reached. The broadly restrictive influences of the future will be, as now, the dimensions of the market and the state of the industrial arts. Mr. Hobson accepts the seven forces which, according to Professor Chapman, limit the growth of industrial plants, and concludes that the seven forces are reducible to a single influence, i.e., administrative power, which he takes to be a constant factor. Mr. Hobson reasons thus:

Throughout industry business may be regarded as gravitating toward a "typical magnitude" which yields for the time being the maximum of economy.

The final limits of this growth are described by a recent economist¹⁵ as functions of:

- (1) The internal complexity of arrangements.
- (2) The importance of quality in the output.

¹⁵ Chapman, S. J.. *The Lancashire Cotton Industry*, page 169.

(3) The expensiveness of the machinery used.

(4) External relations depending on the nature of the markets touched.

(5) Stability in the demand for the output.

(6) The stationary character of the industry in relation to methods or otherwise.

(7) The extent of the economies to be secured by producing on a large scale.¹⁶

If, however, we examine more closely the limits upon the economy of the large business, thus indicated, we shall perceive that they ultimately rest upon a law of diminishing returns, applied not to the mechanics but to the administration of business. Although there must be conceived to be an ultimate limit to the economy of large production dependent on the necessity of having recourse to inferior or more expensive sources of raw materials or power, this, save in rare instances, is not an actual limit. So, likewise, though the practical limits set upon the elaboration of machinery and the division of labour may fix the maximum size of an individual plant, it does not limit the size of a business, which may contain a number of such plants, and will tend to increase this number so long as the net economy of business administration is subserved thereby. This being so, the only substantial limit to the growth of a business, from the standpoint of economy of supply, has reference to the application of administrative power; in other words, of the factors that constitute the business-unit, *ability of control and management must be regarded as a constant factor*.¹⁷

There is no lack of evidences which support Mr. Hobson's claim that there is, *at any given time*, a "typical magnitude," which tends to yield maximum economy. But the evidences also go further to indicate that, *as time goes on*, this "typical magnitude," in many industrial

¹⁶ This last economy is not separate from the rest, but appears to summarize them.

¹⁷ Hobson, John A., *loc. cit.*, pages 138, 139. Italics by the present writer.

fields, becomes larger than it formerly was. Nor do there appear to be any immutable "practical limits set upon the elaboration of machinery and division of labor" within a single industrial plant. The "natural limits" of the 1890's, for example, seem unnatural by comparison to what is done in a large factory of to-day. And, lastly, as to the ultimate limiting influence of administrative power: *at any given time* it clearly is true. But it is difficult to regard this as a "constant factor." A factor is constant only when it is inherent and immutable. And administrative power consists very largely of an acquired and flexible technique. The nature of this technique will be described in the chapter which follows.

It is not possible to estimate how widely the pressures which make for increased size operate among the different types of industrial plants. It is entirely feasible, however, to indicate the characteristics of certain industries which definitely tend to prevent increases in the size of plants. Dr. Thorp, who has had access to all the data of the Bureau of the Census, concludes that some of the general types of industry in which small-scale production is necessary are:

1. Industries whose product cannot be standardized and establishments which attempt to make products to suit the differing tastes of consumers. Such industries produce "tailored" suits, high-grade furniture, art goods, finely bound books, etc.

2. Industries producing for a small market, such as those manufacturing artists' materials, nets and seines, models and patterns.

3. Industries in which the local market is small and whose product has a high transportation cost. In the manufacture of artificial-stone products, or bricks in many localities, the activity could never be conducted on a large scale because of

the limitation of the market for its product and the expense of transportation.

4. Industries in which the material used is widely scattered and cannot be concentrated because of high transportation cost or rapid deterioration. Cheese factories and cider mills may be included in this class.

5. Industries in which skilled labor is the chief element, such as engraving, job printing, etc., whose products are really services rather than commodities.¹⁸

These are the principal characteristics which cause some manufacturing establishments to be small to-day, and which will tend to keep them small in the future. It might be argued that such characteristics are being modified, and becoming less restrictive, in a changing system of industry. It also might be claimed that a constantly diminishing proportion of the total output of American factories is being made under the conditions enumerated above. Without laboring these points, these conditions do not seem to warrant any retraction of our previously stated conclusion, i.e., that manufacturing establishments are steadily tending to become larger in size and, because of the process of growth, are producing more goods than would be produced if the industrial resources of the country were split up among a greater number of smaller plants.

One further observation concerning the consequences of large-scale manufacturing establishments. Such plants are, because of their high degree of mechanization and routine operation, very largely committed to the production of standardized goods. Many of the critics of present-day industry have found in this fact a cause for lamentation. They reason that the manufacture of goods according to standards and quasi-permanent specifications

¹⁸ Thorp, Willard L., *loc. cit.*, page 89.

is limiting the possible choices which consumers may make and thus cramping their several individualities.¹⁹ One senses in these iconoclastic visions that we are drifting toward a situation in which great masses of intellectually, morally, and financially similar people (an example of such a mass being, perhaps, a new and completely homogeneous "middle class") will be using foods, clothes, houses, and all manner of accessories and appurtenances which are, in each instance, more alike than so many peas. If such a situation should transpire, individuality indeed would be cramped, and, in terms of welfare, we should be getting less rather than more. As one contemplates such gloomy forebodings he is inclined to wonder if even biological differences will persist, and to suspect that human beings may be reduced by the external forces of monotony and uniformity to an amoeba-like condition of unspecialized and undifferentiated protoplasm. Then uniformity would have reached the ultimate. There would be standardized people as well as standardized cities, farms, houses, breakfasts, overstuffed furniture, automobiles, chewing gum, and so on through the entire list of the products of industry. But such standardization of people and of products is equally fantastic. It would be difficult to adduce adequate evidence to support the assertion that the present or potential standardized products of modern industry are seri-

¹⁹ It is possible that the author, because of a bias or a "point of view," has read this meaning into some of the statements of these critics. Instances of the opinion referred to here appear to him to exist in wide profusion. A few of them, selected at random, are as follows: Mr. R. Austin Freeman, in his *Social Decay and Regeneration* (pages 90-140), expresses the idea in terms of biological analogy. In an article entitled "The Outlook for American Culture," *Harper's Magazine*, August, 1927, Mr. Aldous Huxley deplores the lack of æsthetic, spiritual, and ideological values in the art-forms and ideas which he associates with mass production. Perhaps the best known statements and implications of the proposition are those in the novels of Mr. Sinclair Lewis.

ously impinging upon the individualities of consumers. In the first place, there are a great host of factory "finished products" whose standardization cannot possibly restrict consumers' choices in any detrimental way. These are, in fact, the commodities which have been most highly standardized. Portland cement is an example of such a commodity. Others are machines, steel rails, wire, nails, bolts, metal lath, and many other iron and steel products; beams, joists, studding, and similar items of lumber; many glass, ceramic, and cloth articles; basic food materials such as flour, sugar, and salt; all petroleum products. As regards the numerous other commodities which actually do reflect and color the personality of the owner or user, it is to be observed that standardization has not made for any complete uniformity or monotony. As markets expand, as population increases, as the purchasing power of people is enhanced and their standards of living rise, it becomes both possible and profitable to apply large-scale operating methods to various grades of the same commodity, each grade possessing entirely different characteristics and qualities. Thus a number of different kinds of automobiles are produced to-day, each of which, because of its large market, is a highly standardized product and made in a factory which approaches the maximum efficient size. The same is true of furniture, textiles, breakfast foods, and countless others of the factory products which we use most. It seems probable that these processes of market expansion, growth of population, increasing real incomes, and rising standards of living, taken together, are at least keeping pace with the process of industrial growth which, if unrestrained, would make for overstandardization.²⁰

²⁰ For a suggestive interpretation of the effects of market growth on the differentiation of standardized industrial products see Tugwell, R. G., *Industry's Coming of Age* (Harcourt Brace, 1927), pages 104-110

Plural Establishments in Single Enterprises

Thus far in the present chapter we have dealt with only one aspect of large-scale industry and the bearing of this one phase on the economic anomaly. We have been examining the causes and the consequences of the tendency of single establishments to grow larger. This process in relation to individual plants is important. Equally significant, however, is the movement toward tying together two or more plants into single enterprises. The operation by one company of several packing plants is an illustration of this tendency. Another is the consolidation of an explosives factory, a textile mill, a cellulose products plant and a roofing material factory—all within a single enterprise. The various industrial establishments operated by the United States Steel Corporation, or by the Ford Motor Company, or by any one of several large oil companies, or by the General Motors Corporation, will occur at once to any one who is versed in American industries. Such enterprises are more than large plants; they are groups of plants, all owned and managed in common. What has been said above concerning the size of individual factories applies to each of the separate plants within the enterprise. Yet the unity of operation of all of them makes the entire group subject to a single coördinated policy and to special considerations which cannot apply to single establishments.

The operation of two or more industrial plants by a single enterprise, although a comparatively recent development, so far as any considerable importance is concerned, is a common condition to-day. Unfortunately no data depicting the movement in the United States exist. There are numerous indications, however, that the number and importance of such concerns are constantly increasing. We are still very close to the beginning of the movement. Yet, Dr. Thorp (who made the first

count of these enterprises from data supplied by the Fourteenth Census) found that in 1919 there were at least 5,838 "central office groups," each operating two or more manufacturing plants. These groups contained 21,464 separate factories, or more than seven per cent of the total number reported by the census, 290,105. There were 534 of the groups which also were more or less actively engaged in mining. The proportion which the number of group-operated factories is of the total number reported probably does not give a complete indication of their importance, industrial or social. In spite of the lack of certain data which were not included in the census enumeration, Dr. Thorp is of the opinion that "they are, in general, establishments above average size both in number of wage earners and in value of products."²¹ It appears, therefore, that industrial concentration through the tying together of several establishments into a single enterprise is growing in all of its dimensions.

For purposes of technical classification the Bureau of the Census was compelled to adopt the somewhat arbitrary "central office group" as the unit of enumeration for concerns which operate more than one industrial plant. The Bureau defines the term "establishment" as "an enterprise within an industry and within a locality, (which) may consist of more than one plant, only providing a common set of books is kept." And "a central office group exists when a single central office operates enterprises in more than one locality or in more than one industry, or more than one plant within a locality and industry, providing those plants are sufficiently separate entities to keep separate books of accounts."²² This mode of classification appears to be the most accurate that the Bureau might have used; its power of discrimina-

²¹ Thorp, Willard L., *loc. cit.*, page 103.

²² *Ibid.*, page 101.

tion would not be sufficient to enable it to unscramble many large enterprises which operate two or more plants in the same industry and the same locality and keep a single set of accounts for their total operations. Yet it is evident that the totals of number, size, and importance of enterprises which include two or more establishments would be somewhat larger than those of "central office groups." It also is to be observed that the data covered by Dr. Thorp's census monograph do not include public utility industries—a field in which consolidation of different plants has been most marked.

There are, in general, two sets of trends which are apparent in the process of consolidation. The common designations applied to them by economists are "horizontal combination" and "vertical combination." Horizontal combinations are those which consist of several establishments which are functionally alike or similar, i.e., are engaged in turning out goods or services of the same type. A company which operates several packing plants is an example. By a vertical combination is meant one whose several establishments are functionally dissimilar, but are, all of them, engaged in carrying forward a single purpose or set of purposes. A company engaged primarily in turning out steel products and which facilitates that end by operating coal and iron mines, blast furnaces, rolling mills, a railroad, steamship lines, selling agencies, and other establishments furnishing various related services and facilities, is an example. Some combinations develop along both horizontal and vertical lines and so cannot be placed in either exclusive category. And some few others have grown and branched out in ways which do not conform to either classification. The enumeration by the Fourteenth Census of central office groups shows that a small number of them are composed of plants quite dissimilar as to functions, processes, materials, and markets,

and whose various products are entirely unrelated to each other.²³ Each of these can be explained only in terms of the special requirements and aims of the separate enterprises. Yet almost all combinations of several establishments in a single enterprise are in type either horizontal or vertical or both.

The simpler form of industrial combination is the horizontal. By this arrangement various plants which, if separately owned and managed, would be competitors of one another, are owned in common and operated in accordance with a single policy. The desire to restrict competition appears in some instances to have been as active an influence making for horizontal combination, as the various possible savings and operating efficiencies have been; this, at least, seems a fair appraisal of the aims of most of the early "trust" organizers. It is not possible to state the degree of importance which attaches to each of the several inducements. Yet it is obvious that whatever restraint of competition obtains under such circumstances may tend toward an immediate restriction of production. It must be noted, however, that most horizontal combinations do not possess a degree of monopoly power which would warrant any curtailment of production beyond that which would occur if the several plants were separately owned and administered. On the positive side of the case it is to be observed that there are certain phases of horizontal combination which make for enhanced rather than diminished production.

The first and most obvious economies attendant upon this type of industrial consolidation are the presumably lower material costs which come from buying in large quantities and the presumably smaller selling costs which are derived from the absence of duplication of selling efforts. In a great many instances these economies prob-

²³ See Thorp, Willard L., *loc. cit.*, pages 261-266.

ably have been more apparent than real. Professor Dewing has prepared a very thorough study of the success of industrial consolidation, measured in terms of pecuniary gain, by examining the available records of twenty-nine such concerns. Each of his cases was a combination which had been formed prior to 1903 and composed of five or more erstwhile competing establishments. Professor Dewing has summarized the aims and results of his study as follows:

In order to test, empirically, the actual results of consolidation, as compared with previous earnings under competitive conditions and with the anticipated earnings after consolidation, a statistical study of the earnings of 29 industrial consolidations was prepared. This is a promiscuous collection, including those reputed successful, unsuccessful, and "indifferent." As a whole, therefore, it represents a fairly accurate index of the actual financial results of consolidation as reflected in the hopes of the promoters.

Viewed in terms of rough averages the study shows that the earnings during the period immediately preceding consolidation, when the component plants were operating under competitive conditions, were approximately a quarter more than during the first year of the consolidation, and exceeded both the average earnings of the first ten years and the earnings of the tenth year when the consolidation might be supposed to have worked out its salvation after the addition of improvements and extensions. Furthermore, promoters, bankers, engineers, and accountants were prone to estimate what the earnings after consolidation were likely to reach, making liberal allowance for the economies of large-scale production and coöperation in contradistinction to competition. These estimates exceeded by nearly a half the actual earnings during the first year, and were conspicuously greater than the average earnings for the first ten-year period. Putting the matter another way, only twelve of the twenty-nine consolidations had earnings during their first year of existence equal to the earnings of the separate plants before consolidation; and only four had earnings equal to the estimated earnings.

The majority of them were formed during the earlier stages of a boom, so that general economic conditions were in their favor rather than against them. The average earnings for ten years were, in seventeen cases out of the twenty-nine, less than the earnings of the independent plants, and in twenty-four cases less than the anticipated earnings. In fact, looking at these statistics in terms of broad averages, it would appear that the industrial consolidation never attained, even approximately, the expectations of its promoters.

Although these statistics are not extensive, they do include consolidations which have been considered both successful and unsuccessful. They show actual conditions, without the bias of some preconceived theory of the economies of industrial consolidation. They indicate that the roseate hopes of promoters were not realized, but that, once the era of promotion past and the new company was well established in its trade position, its earnings were not very different from the earnings of the companies out of which it was formed. At all events, enormous profits did not follow upon mere consolidation and mere large-scale production.²⁴

Professor Dewing's findings are significant in that they demonstrate that the prospect of larger gains, while unquestionably the motive behind the combination of establishments along horizontal lines, often has not materialized. We should be more interested in knowing whether such combination has actually resulted in larger or in smaller production. Unfortunately there is no empirical test. Even when it can be shown that the production was definitely greater or less after consolidation than before, it is not possible to determine accurately whether the increase or the diminution was due to the fact of consolidation or to some other influence.

²⁴ Dewing, Arthur S., *The Financial Policy of Corporations*, Revised Edition (Ronald Press, 1926), pages 673, 674. The study described in the quotation was first published under the title of "A Statistical Test of the Success of Consolidations" in the *Quarterly Journal of Economics*, November, 1921, and has been reprinted in *The Financial Policy of Corporations*, pages 885-898.

Yet there are circumstantial evidences to support the opinion that horizontal combination tends in specific ways to induce larger production than would occur in its absence. We shall postpone the question of monopoly practice for consideration in later chapters.

In the first place this type of combination tends to secure a more complete and efficient use of the society's productive resources. The physical advantages of horizontal organization are generally conceived by economists to be three: (1) the saving of cross freights; (2) the specialization of plants; (3) the concentration of fluctuations of production in single plants.²⁵ It is immediately apparent that the first and second of these advantages are not compatible with each other; a combination must forego one or the other of them. Each of these conditions is sufficiently important to warrant a brief and separate elaboration and exemplification.

1. *The Saving of Cross Freights.* By locating plants in places available to different divisions of the market, or at different sources of raw materials, much cross-shipment may be avoided. Other things being equal, the saving of transportation capacity is a net social gain. An illustration of this saving is afforded by several of the large packing companies. Although this industry has its largest concentration in Chicago (chiefly because of the fact that half of the railroad mileage of the United States terminates there) some of the companies also operate packing plants in Kansas City, Omaha, Fort Worth, Oklahoma City, and other places. Each of these cities possesses transportation facilities which link it with parts of the cattle-raising sections of the West and also give it access to certain marketing regions.

2. *The Specialization of Plants.* Horizontal combination makes it possible for the enterprise to make various

²⁵ Cf. Clark, J. Maurice, *loc. cit.*, page 142.

grades of the same commodity, thus catering to the demands of a wide market, and at the same time so to divide the grades among its different plants as to secure maximum operating efficiency in each. It is patent that technological circumstances in many industries will not permit a single plant to turn out a wide variety of products without a considerable sacrifice of operating efficiency. Yet a single enterprise which is composed of several establishments can turn out goods of various grades or specifications without such a sacrifice. The American Steel Hoop Company, by dividing its eighty-odd sizes and varieties among its several plants so that each specialized in producing a single group or class, effected important economies.²⁰ The General Motors Corporation is a well-known combination of differentiated and specialized establishments which produce a wide variety of automobiles.

3. *The Concentration of Fluctuations of Production in Single Plants.* Some horizontal combinations are able, under nearly all circumstances, to operate most of their plants at the rate which most efficiently utilizes their capacities. Temporary variations of output may be absorbed in certain plants which are maintained for that purpose. Professor Clark illustrates and comments on this procedure as follows: "The United States Sugar Refining Company concentrated its fluctuations in a large refinery in Brooklyn. The Carnegie Steel Company has a huge by-product coke plant at Clairton, near Pittsburgh, which does not supply all of the coke the company needs in active times, so that it can be kept running at full capacity together with a fleet of towboats and barges which bring down coal from the company's mines farther up the Monongahela River. The fluctuations are taken up by beehive coke ovens located nearer the

²⁰ Cited by Clark, J. Maurice, *loc. cit.*, page 96.

mines. Deplorable as it may seem that there should be any beehive ovens, it is certainly more economical, if they must be used at all, to use them in this way. This kind of economy seems to be one of the recognized advantages of horizontal combination."²⁷ It may be added, of course, that it is an advantage which is peculiar to horizontal combination.

Still other ways in which horizontal combination tends to induce larger production are those associated with the increased productive flexibility of such enterprises. It is possible for a combination of functionally similar plants to adapt its productive arrangements to meet new or changed demands, and also to anticipate such demands, in ways which are not available to the one-plant concern. Perhaps the most common way in which this may be effected is through the allocation or reallocation of productive facilities. It is practicable for a horizontal combination to reduce its production of goods of a certain type or in a certain place, or even to withdraw from such production, without retiring from business or abandoning its capital investment. On the other hand, it is practicable for such a combination to divert parts of its productive capacity, or to direct new capacity, toward the making of more of certain types or grades of goods or toward making new types or grades. All of this may be expedited and directed by the central management of the combination. The General Motors Corporation, for example, may withdraw from the manufacture of Oldsmobiles and divert the capital thus recaptured to the manufacture of Chevrolets—if the market does not take the Oldsmobile and there is a growing demand for the Chevrolet. Or it may make similar shifts of productive facilities among Cadillac, Buick, G.M.C. Trucks, Oakland, or any other of its various

²⁷ *Ibid.*, page 95.

products. It is, of course, evident that such reallocation would not be possible to separate establishments. A single-plant enterprise must remain a going concern, or suffer failure, in accordance with the inflexible operation of its one plant. It will not voluntarily withdraw because it has no reserve forces upon which to retire, but will, if the market so dictates, die fighting what may be the inevitable. It is true, of course, that capital resources tend to adjust themselves to market trends by withdrawal from unremunerative fields and reinvestment in others more favored by the market. But such a process is extremely slow and wasteful by comparison to the flexibility with which horizontal combinations can adapt themselves to changed conditions.

This advantage of allocation of productive facilities takes various other special forms. One of them is the support which certain of the establishments within a combination can give to other establishments which are in temporary difficulty, or which may promise ultimately to stand on their own feet even though they are weak for the time being. The separate units are not single sticks; the whole enterprise is rather a bundle of sticks, each of which gives strength to the others. The support of a constituent plant through its infancy and until it is able to assume responsibilities of its own is a common practice of horizontal combinations. Because of the hazards which attend the launching of a business enterprise, many lines of production would not be developed as rapidly as they are if it were not for the sustaining strength of horizontal combination. In the same way the securing of new or additional capital for a particular plant is facilitated by this form of association. It may be secured from the consolidated earnings of the combination. Or, if loans are resorted to, the total assets and earnings of the entire enterprise may be hypothe-

cated, thus giving excellent standing to loans which might be impossible of negotiation on the merits of the single plant's security or prospects.

Leaving out of account, for the present, the consequences of monopoly practices, a fair conclusion seems to be that horizontal combination tends to facilitate production in ways which would not exist in the absence of such organizations of industrial plants.

The second class of single enterprises containing plural establishments, i.e., vertical combination, is more complicated than the first and, in some respects, more significant in its bearing on the problem in hand. This type of combination already has been defined as one whose several establishments are functionally dissimilar but are, all of them, engaged in carrying forward a single purpose or set of purposes. The variety and complexity of such concerns has been indicated by Dr. Thorp, who divides all vertical combinations into three categories. The basis of classification used is the different functional relationships existing between the several plants in the combination. The three categories are (1) divergent functions (joint products, by-products, like processes); (2) converging functions (complementary products, auxiliary products, like markets); (3) continuing functions.²⁸ It is to be observed that these three classes, while dissimilar as to functions, are alike in that they all are based upon the common possession of some fundamental industrial condition (e.g. materials, markets, or processes). Each of them links up a greater or smaller number of the productive steps which goods traverse along the route from raw materials to "final" consumers. They are, in brief, integrative.

The integration of industrial processes, and certain of

²⁸ See Thorp, Willard L., *loc. cit.*, pages 159-164, for a complete outline of this scheme of functional analysis.

its consequences to the economic anomaly, already have been discussed in connection with the organization and operation of large single establishments. Integration as it occurs in vertical combinations possesses the same characteristics as in such single plants. It is, however, wider in its scope and in its consequences.

The separation and specialization of productive operations among industrial establishments, which is a common condition to-day, was initiated in the early phases of the industrial revolution by the introduction of power-driven machinery. Plants began to engage in only a narrow division of the total productive function and thus to form links in a chain of processes. Prior to the use of power machines—i.e., under the handicraft and household circumstances of production—it seems probable that, in general, a larger proportion of the total process of making goods was carried through in a single establishment than was the case after the advent of the highly mechanized factory. One student of the disintegration of manufacturing—the division of different stages of a single productive process among different enterprises—concludes that it was due to a lack, at that time, of capital resources. There was not the high degree of concentration of capital which would permit single concerns to attempt more than one or a few steps in the production of a commodity.²⁹ Another reason may have been a lack of sufficiently large markets. A manufacturer of “finished” products then, as now, needed to be able to dispose of enormous quantities of goods before it would pay him to apply the new machine methods to making his materials or his equipment, or fabricating by-products. Whatever the reasons may have been, it remains a fact that the beginnings of machine production

²⁹ Frank, Lawrence K., “The Significance of Industrial Integration,” *The Journal of Political Economy*, Vol. XIII, No. 2, April, 1925, pages 179-195.

were accompanied by a separation and segregation of steps in manufacturing goods. To-day the arrangements of industry have changed. The rise of the corporate form of business organization and of greatly enlarged credit facilities (which appear to be less causes of capital concentration than results of commercial and industrial needs) facilitate the assembling of large bodies of capital. The growth of improved means of transportation and communication, the possession of greater purchasing power by consumers, and the increasing dependence of specialized persons on buying most of the things they need or want, have created markets of vast dimensions. So the growth of machine industry has set in motion forces which react upon itself and cause still further growth, thus creating an apparently endless chain of causation. These are the forces, social, commercial, financial, and technological, which have caused industrial integration and promise to carry it much farther.

Two or three illustrations of what has been accomplished by the integration of various productive functions and processes within an enterprise through vertical combination of establishments may help to make clear the significance of this movement to the problem we are studying. The E. I. du Pont de Nemours Company is one of the largest and most highly integrated industrial corporations in the United States. The company came into existence more than a century ago as a manufacturer of gunpowder and has been, almost since its beginning, the largest maker of explosives in the United States. In addition to a wide variety of explosives, the company has engaged extensively in the manufacture of various products derived from cellulose materials. It also has branched out widely in the production of chemicals and in the making of "finished" products which embody the materials it produces. Through the purchase of stock in

other corporations (some of them highly integrated combinations) it has obtained some degree of control over companies which are its customers or on which it depends for certain services or facilities. The du Pont company is the largest single stockholder in the General Motors Corporation and owns an important block of the stock of the United States Steel Corporation.

It will be observed at once that the interests of this company are not concentrated on any single product. In the variety and complexity of its operations are to be found all three of Dr. Thorp's functional categories which were outlined above. Its functions are *divergent* to the extent that they consist of making different products from the same materials or by the same processes. They are *converging* inasmuch as they are concerned with turning out auxiliary or complementary products or various goods designed for the same markets. They are *continuing* to the extent that they include several or all of the steps required in the fabrication of particular commodities. The total result of this complexity of functions is an amazing variety of related and unrelated products. These include all manner of explosives, raw chemical preparations, paints, a lacquer which recently has caused great changes in the finishing of automobile bodies and other production operations, artificial silks, dyestuffs, roofing materials, substitutes for leather and for ivory, and a number of other goods which are in common use. A facetious journalist has written: "A woman dressed in du Pont fabric dyed with du Pont dyes may, in a du Pont (General Motors) automobile, finished with a du Pont lacquer and upholstered in du Pont material, ride over a road constructed with the aid of du Pont blasting explosives. In her dressing case may be toilet articles of the du Pont imitation ivory. In case she is

held up it may be by a gunman using du Pont powder.”²⁰ The supposition is an ingenious one, and yet the writer succeeded in weaving into it only a small fraction of the varied products of the E. I. du Pont de Nemours Company.

A markedly different illustration of industrial integration through vertical combination of plants is afforded by the Ford Motor Company. This concern, unlike the du Pont company, has a single dominating functional interest—the making of Ford automobiles. It is true, of course, that it turns out other “finished” products, such as Fordson tractors and Lincoln motor cars, and that it owns as widely varied establishments as shoe stores and railroads. These interests, however, have risen out of the business of making Ford automobiles and contribute to that end. The Ford organization is so arranged that integration in a vertical direction broadens out horizontally at several points as, for example, by the operation of a number of assembling plants and several body factories. The history of the Ford Motor Company is a story of vast expansion both territorially and industrially. Mr. Henry Ford gives us a description of its present status.

. . . We have, step by step, gone back to primary sources. We are in the motor business and in no other business. Everything that we do gets back to the motor. With the Ford Motor Company of Canada, there are now a total of eighty-eight plants, of which sixty are in the United States and twenty-eight in foreign countries. No one plant anywhere makes a complete automobile. Of the plants in the United States, twenty-four are exclusively manufacturing plants and thirty-six are assembling or partly manufacturing and partly assembling.

We are in the following lines of business, every one of

²⁰ *The New York Times*, September 4, 1927. Article by C. McD. Puckette.

which grows out of making motors: aeroplanes, coal mining, coke manufacture, by-products manufacture, lead mining, iron mining, foundry, steel manufacture, tool making, machinery manufacture, car truck and tractor manufacture, glass manufacture, artificial leather, copper wire, Fordite, textiles, batteries and generators, paper, cement, automobile bodies, Johanssen gauges, electric power, filtered water, flour, motion pictures, hospital, farming and stock raising, radio, printing, photography, forging, flax growing, steam turbine, electric locomotives, logging, sawmills, body parts, dry kilns, wood distillation, products of hydroelectric power, grocery stores, shoe stores, clothing stores, butcher shop, railroads, educational, ocean transportation, lake transportation, tractors, and automobiles. . . .

We have built nothing for the sake of building. We have bought nothing for the sake of buying. We make nothing for the sake of making. Our operations all center about the manufacture of motors.³¹

The E. I. du Pont de Nemours Company and the Ford Motor Company have one significant feature in common: each of them has achieved a remarkable organization and coördination of productive functions through vertical combination of plants. Both are highly integrated. And, while both are striking examples, they are only typical of a tendency which exists in many fields of industry.

Integration through vertical combination differs only in degree from integration within a single establishment. Yet the difference in degree is important. Simply because it does not limit its activities to those which might be assembled under a single roof, the Ford Motor Company is able to encompass a wider range of functions than would be possible to any one-plant concern. Hence there is a farther reaching coördination, extending

³¹ Ford, Henry, in collaboration with Samuel Crowther, *To-day and To-morrow* (Doubleday, Page, 1926), pages 40, 41.

back to basic materials and transport rather than including merely a few selected final processes. To this extent there is an increased autonomy or self-sufficiency and a correspondingly lessened dependence on outside agencies. The gears of the machine of industry are less likely to clog or slip or strip because they are held in mesh by a more powerful unified policy. Carried to its ultimate, there is attained the highest degree of productive coördination that humanly fallible humans are capable of. We seem to be not far from the day when "machines to make machines to make machines" will be owned and used by the enterprises which employ the machines of the third generation.

From the standpoint of its effect upon physical production, this far-reaching integration does more than eliminate the random hazards due to the interdependence of separate concerns. It also makes for a more evenly balanced allocation of the productive resources which the society has at its disposal. Thus the capacity devoted to make shoe strings tends toward a more commensurate ratio to the capacity for making sole leather. In like manner the output of motors for automobiles does not run far ahead of, or fall far behind, the output of automobile bodies or axles or wind-shields.³² And the vertical combination, like that along horizontal lines, is enabled by its greater strength and wider distribution of risks to develop new industrial processes, and to open up entire new industrial fields, much more rapidly and

³² Integration, while tending to maintain a proper proportionality between different links in a chain of productive functions, does not prevent an underdevelopment or an overexpansion of an entire industry. The automobile industry, for example, appears to have grown to such an extent as to be threatened with a saturation of its market. No amount of purely vertical combination could have prevented it. Under such circumstances horizontal combination, rather than vertical, is a remedy which tends to be employed. Trade associations, another device which directly or indirectly aids in adjusting the size of whole industries, will be discussed in Chapter VI.

more economically than would be possible to single-plant and single-function enterprises.³³ Reduced to final terms, the greater industrial coördination, stabilization, and flexibility which result from widespread integration mean that manufacturers are committing themselves to the making of more goods in order to make more money. In regard to the relation between pecuniary aims and productive results, this appears to be the long-time trend of industrial integration in both the narrower sense in which it applies to single establishments and the broader sense of its application to vertical combinations.

This long-time trend, while leading toward a changed general relation between making goods and making money, tends also toward minimizing short-time obstacles to production. It is clear, for example, that adequate coördination and synchronization of entire industrial processes help to smooth out the seasonal peaks and slumps peculiar to many of the separate constituent processes. Carried to their ultimate extent, such arrangements promise also to reduce the amplitude of the cyclical oscillations in economic activity which we term broadly "periods of prosperity" and "periods of depression." A business cycle is a succession of fluctuations upward and downward from a position of equilibrium in both pecuniary and physical volumes of production. Harking back to our postulate that the material welfare of a society and of the individuals composing it is determined by the amount and character of goods and services currently produced or rendered and the way in which these goods

³³ Thus the speed and facility with which the manufacture of radio equipment has developed probably are due, in large measure, to the fact that much of the development has been carried on by companies, already highly integrated, in the electrical industry. These companies have merely added the making of such equipment to their other functions. The speed and facility demonstrated in this instance are striking evidences of the flexibility and efficiency of an integrated industry in meeting a new situation.

and services are distributed among the members of the group, we may hold that the productive consequences of both cyclical "prosperity" and "depression" are socially undesirable. A state of flexible or oscillating equilibrium would yield us more in goods and services if a long period of time is taken into account. Why then do we not maintain such an equilibrium? One student of business cycles has explained our failure to do so as follows:

The minute division of labor among industries, due to the great variety of capital equipment and to high specialization, has materially lengthened the time required from the initiation of production to the completion of all classes of goods, particularly in the case of consumers' goods. This roundabout method of production has made it harder for business men to coördinate production with demand. This is true because it is hard to predict future demand at the time production is initiated and the equilibrium may be upset, therefore, as a result of overexpansion of certain industries by business men.

The lack of a centralized power which coördinates the work of all competing and complementary business enterprises is one of the chief characteristics of the industrial and business systems. Over-development of certain industries may result from the lack of a restraining influence placed upon current operations of business men engaged in those industries. Such a development may be due partly to the lack of knowledge on the part of each, of the current operations of competitors, thus making it impossible to accurately forecast supply. But the unrestrained desire to gain immediate profits, regardless of future consequences, is a more important factor in upsetting the industrial equilibrium.

The constant invention of new types of capital and new processes brings about great internal changes in industries and affects their demand for new capital equipment and their volume of output. These changes may be great enough at any one time to upset the equilibrium of the whole system. The development of new industries, due to the development of some

new commodity which satisfies some new want or some old one in a new way, may be great enough temporarily to unbalance the system.³⁴

The "centralized power which coördinates the work of . . . complementary business enterprises" is being supplied by industrial integration—particularly by that which is achieved through vertical combination. When a number of separate, but related, industrial functions have been united into a single process, the result is not only coördination; there also is an elimination of buying and selling relationships which, because they are vital to the making of money by both buyer and seller, have led to recurrent overstimulation and obstruction to the making of goods. One other quotation, this time from

³⁴ Adams, Arthur B., *Economics of Business Cycles* (McGraw-Hill, 1925), pages 26, 27. Most students of business cycles are of the opinion that they are caused by market relationships of buying and selling. That is to say, they seek in market relations the reason for such common cyclical occurrences as the inability of factories to operate when their costs mount higher than their prices. The work of Professor Adams from which the above quotation was taken is an excellent example of this type of analysis. Others which are typical and of particular importance are: Mitchell, Wesley C., *Business Cycles: the Problem and its Setting* (National Bureau of Economic Research, 1927); Hobson, J. A., *Economics of Unemployment* (Macmillan, 1922); Robertson, D. H., *A Study of Industrial Fluctuations* (P. S. King & Son, 1915); Schumpeter, J., *Die Wellenbewegung des Wirtschaftslebens*, "Archiv für Sozialwissenschaft und Sozialpolitik, Juli, 1914; Foster and Catchings, *Money* (Pollak Foundation, 1923) and *Profits* (Pollak Foundation, 1925). All of these writers find their explanations for business cycles in market disturbances, although they differ widely in their opinions as to which specific disturbances are fundamental in the chain of causation. Thus Professor Adams believes that business cycles are due to a lack of constant proportionality between incomes disbursed and goods and services concurrently offered in the market; this lack of proportionality he explains in turn as caused by innovations in industrial processes and products. Foster and Catchings agree in regard to the lack of constant proportionality; but they explain it by pointing to the failure of business concerns to pay out as much money as they take in, i.e., to assign profits to reserves instead of paying them out as dividends. Thus there is disagreement among causal doctrines. Yet there is a general agreement that the cyclical movements are induced by changing circumstances of buying and selling, costs and prices.

Professor Frank, should throw light upon the potentialities of industrial integration in relation to business cycles. It is a pregnant and plausible prophecy.

It is usual to think of society as divided between producing and consuming interests, but we frequently fail to realize the magnitude of the pecuniary transactions (measured in sheer quantity of materials transferred) which occur between business men as producer-buyers and producer-sellers or distributor-buyers and distributor-sellers, in which the final users of the goods do not participate. From the point of view of industrial management, these transactions are not only unnecessary, but often a real obstacle to effective use of industrial equipment, as we see in the several periods of business cycles. When we detach ourselves from the traditional attitude toward business it is obviously absurd that our industrial activities should be conducted by men who are intent upon deriving the largest pecuniary gain from their relations with other managers of industry, through bargaining which is continually frustrating a well-balanced program of production in all stages of industry. But since this state of affairs has been historically derived, it is comprehensible, however absurd it may appear technically. . . .

Integration will largely reduce, if not eliminate, business cycles, for the simple reason that it will remove business from control of industrial processes, thus permitting that continuous non-fluctuating operation which is the peculiar function of the machine. Even agricultural operations, which are so variable and seemingly beyond man's control, will be regularized so far as production is concerned, since the integration of agriculture with the industries using agricultural products will undoubtedly be accompanied by the development of reserve stocks and storage for stabilizing crop yields from year to year, thus freeing industrial operations from the risk and uncertainty of fluctuating crops. . . .

Thus, as we see this onward sweep of the industrial revolution fulfilling its inevitable function of reorganizing man's industrial activities, and hence altering, *pro tanto*, his social

life, the significance of what we call integration appears very large indeed. Naturally we regard the development of integration as something rather daring and experimental, to be viewed questioningly and made to prove its right to usurp our accustomed life and pecuniary methods; but to our grandchildren or great-grandchildren, our doubts and hesitation and reluctance will probably seem highly amusing, much as we regard the early railroad operations where each shipper had his own car and where the ownership of the roads was limited to small local sections, and the movement of goods and passengers was largely at the mercy of bargaining between rival and connecting owners. The notion of transportation as an industrial activity, involving through movement, regardless of proprietary rights, has scarcely become established even now, as witness the current discussion of the merits of railroad consolidation. But integration of industry and consolidation of railroads and public utilities and the social changes they will necessitate will come. . . .³⁵

³⁵ Frank, Lawrence K., "The Significance of Industrial Integration," *Journal of Political Economy*. Vol. XXXIII, No. 2, April, 1925, pages 192-195.

CHAPTER V

INTERNAL INDUSTRIAL EFFICIENCY

THE period of the modern economy, which has become generally known as the age of quantity production, has recently been described also as the era of large-scale industrial waste. On every hand we are confronted with evidences of the prodigal and destructive manner in which our natural resources have been exploited, and with the negative but no less insistent facts of unutilized capacity and power for production. With all of these losses of actual and potential output we are, as a society, deeply concerned. And yet, being the kind of society that we are, there are fairly definite limits to what we can do about it. The national and state governments have taken an active—and almost single-handed—part in conservation work relating to certain of the extractive industries. Yet their activities in regard to the internal operation of business enterprises have been confined almost exclusively to advisory functions. How tragic are the wastes in industry is evidenced by a random sampling of the facts, and comparisons between the best and the worst records in various productive fields.

“A Chicago brick machine makes 49,000 bricks per hour. According to Ethelbert Stewart, if all plants were as efficient as the best brickyards in Chicago, the industry could release 80 per cent of its employees to other productive work—or if it kept all its men, make five times as many bricks. . . . There are boot and shoe factories where the output is two pairs per man per day, and

others where the output is 12 pairs. There are blast furnaces where it takes one man 1 hour and 12 minutes to produce a ton of iron, and other blast furnaces where it takes one man 11 hours to produce a ton—nearly ten times as long. There are sawmills where the output is 15 board feet per man hour, and others where it is 323. If all sawmills were as efficient as the *average* (not the best) mill, one-half the present man-power could produce the present output. If all sawmills could operate on a 323 board feet per hour basis, 45,000 men could do the work which now takes the labor of 292,000 men.”¹

Allowance must be made for all the diverse conditions and circumstances which tend to explain and justify a certain range of difference in productive efficiency. Yet such figures as are quoted above inevitably lead to the conclusion that our productive enterprises are wasteful to a degree which is socially inexcusable.

Equally significant and much more comprehensive are the findings of the Committee on Elimination of Waste in Industry of the Federated American Engineering Societies. This body of experts, commonly known as the “Hoover Committee,” in its report entitled *Waste in Industry* has supplied us with the most complete and authoritative data concerning waste which have yet been compiled. In 1921 this Committee made a thorough study of conditions in six important industrial fields and sought to formulate the extent to which waste existed in each. In investigating each enterprise the productive practices and methods actually in use were compared, not to any ideal or hypothetical standard of perfect efficiency, but rather to the most effective performance attained in the industry. The Committee “conceived that a given practice is not wasteful until a better has

¹ Chase, Stuart, *The Tragedy of Waste*, page 152. Data from *Monthly Labor Review* of the U. S. Department of Labor, Bureau of Labor Statistics, July 1924, pages 1-8.

been revealed, and that the value of a newer practice, or the amount by which it is an improvement over an earlier one, can only be determined by units and methods of measurement.”² On this basis, and taking 100% to represent the highest possible efficiency, the Committee found an average actual attainment of approximately 36% in the men’s clothing industry, 47% in the building industry, 42% in the printing industry, 59% in the boot and shoe manufacturing industry, 71% in the metal trades, 51% in the textile manufacturing industry.³

The lack of efficiency in the establishments studied was ascribed by the committee to:

- “1. Low production caused by faulty management of materials, plant, equipment and men.
- “2. Interrupted production, caused by idle men, idle materials, idle plants, idle equipment.
- “3. Restricted production intentionally caused by owners, management, or labor.
- “4. Lost production caused by ill health, physical defects, and industrial accidents.”⁴

The first of these causes of waste is definitely chargeable against the internal efficiency of the establishments themselves. The second and third are due, at least in part, to outside market circumstances which condition internal policy but which are not subject to complete control by the policies of single establishments. The fourth must be debited jointly to internal industrial efficiency and to social arrangements. Since business enterprises are necessarily acquisitive rather than humanitarian in their motives, we can expect them to safeguard their workers systematically only when and

² *Waste in Industry*, page 3.

³ *Ibid.* Percentages computed from data presented on page 9.

⁴ *Ibid.*, page 8.

because it pays them to do so. Social control—specific laws requiring insurance of workmen by employers and establishing standards of safety and sanitation with penalties for noncompliance—is the only direct means we have of making it pay.

In this study we are less concerned with the negative facts of waste in industry than with the positive facts of industrial efficiency. And yet, just as we can best establish the existence of matter by appealing to its nonexistence in a vacuum, and as we can measure cold only as a degree of heat, so we can best identify industrial efficiency by referring to its negative side. Strictly speaking, there is no "war with waste" in industry. Even the most speculatively inclined among industrial managers and workmen are not, in their respective capacities, interested in any condition as vague and abstract as "waste." They are concerned with realities which have for them definite and concrete meanings. In so far as workmen and managers are constructive in their conduct toward these realities (i.e. not creatures of impulse or habit in their reactions to them) workmen use them for their own personal gain and managers employ them in the interests of earnings statements. Workmen increase their individual outputs because it pays them to do so or because they cannot avoid doing so. Managers institute new schemes and devices for enlarging the production of their plants because such actions promise larger profits to their enterprises. By industrial efficiency we mean the effective utilization of productive capacity toward achieving these objectives. This does not mean that the most profitable enterprises or the highest paid workmen are the most efficient; pecuniary success is more likely to be the result of fortuitous circumstance. But it does mean that increased production and the elimination of waste—although they actually do accompany increased

industrial efficiency—are incidental results rather than major objectives.

Nor are we justified in reading into the facts of industrial waste an exclusive indictment of the contemporary economy. The facts are new. But the conditions which they describe are as old as industry itself. The earth had traversed its orbit about the sun for countless millenniums before any man was aware of it. And wastes in productive processes existed long before there were engineers and statisticians to identify and measure them. Certain present-day wastes are peculiar to technical circumstances in large-scale factory production. Yet even these have been more than offset by technical improvements in industrial efficiency made possible and necessary by the very conditions of large-scale factory production. The facts of waste in industry are significant and important. They indicate specific flaws with which our society is honeycombed. They also furnish an affirmative answer to Professor Hobson's question, "Could not the output of available wealth be doubled?"⁵

To compare the present state of industrial efficiency with that of the past we need statistics. And prior to those compiled in 1921 by the Hoover Committee there are none which can be used for purposes of comparison. Yet there are evidences that industrial efficiency is greater to-day than it was forty, twenty, or even ten years ago. And such facts as we have appear to demonstrate that as industrial efficiency has increased there has been a resulting and concomitant increase in the necessity of making goods in order to make money.

The participants in the movement toward increased industrial efficiency are the same as the participants in industrial waste. The Hoover Committee, having formulated the extent to which waste existed in the six indus-

⁵ See page 20, above.

tries studied and having ascribed the causes of the waste to specific conditions which they found, undertook also to allocate responsibility for the waste. "Responsibility," as the Committee uses the term, has no moral implications. It means simply that the causes of the waste indicated in each instance can be removed only by the particular agency to which the waste is assigned.

The Committee assessed responsibility for waste as follows:^a

<i>Industry Studied</i>	<i>Responsibility Assayed Against Management</i>	<i>Responsibility Assayed Against Labor</i>	<i>Responsibility Assayed Against Outside Contacts (The Public, Trade Relationships, and Other Factors)</i>
Men's Clothing Mfg.	75%	16%	9%
Building Industry....	65%	21%	14%
Printing	63%	28%	9%
Boot and Shoe Mfg..	73%	11%	16%
Metal Trades.....	81%	9%	10%
Textile Mfg.....	50%	10%	40%

The most striking feature of this allocation of responsibility for waste is the exceedingly large assessment against industrial management. The positive corollary of this negative indictment is that management bears the largest responsibility for industrial efficiency. It is equally clear that laborers also have an important part in whatever degree of efficiency an enterprise or an industry may achieve. The third participant in industrial waste, "Outside Contacts," conditions and modifies industrial efficiency. Yet it definitely is beyond the control of practices and policies which are concerned exclusively with

^a *Waste in Industry*, page 9.

operations within the enterprise. Consequently it cannot be directly considered in connection with internal industrial efficiency. The conduct of relationships between manufacturing enterprises and factors or influences external to themselves will be treated in Chapter VI of this study.

Within any establishment industrial efficiency may be gained along any or all of three lines: first, through definite policies and devices of management; second, through the actual achievements of individual laborers; third, through the positive development and institution of technical processes, and better ways and means of doing things. And industrial efficiency, let it be remembered, looks only to the individual or corporate interests of those concerned in it, be they managers or workmen or both. In the remainder of this chapter we shall trace the growth of internal industrial efficiency along each of the three lines indicated above. We shall undertake also to demonstrate that increased industrial efficiency—which we have defined as a relative of technique to individual and corporate interests—tends toward the making of more goods as a means to making money.

The Efficiency of Management

By the “management” of a business enterprise is meant the congeries of devices and policies by which it directs and administers its internal operations and coördinates its interests with its social and business environment. On management devolves the primary and major responsibility for the pecuniary success or failure of the enterprise. So marked is its basic importance to-day that it often is said that “thought, skill, and intelligence have been transferred from workers to machines and management.” The constantly increasing rapidity of this transfer is typical of the cumulative character of most

economic change. The beginnings of large-scale industry forced a complete separation of management from other functions. The increased efficiency resulting from this separation and specialization has made possible still larger industrial units. Thus the growth in size of industrial establishments and the rise of specialized management have been mutually contributory. The background from which the "management movement" began has been described in Chapter III. We are here concerned with its content and its results.

The policies and devices of industrial establishments are functions of business judgments. Modern science has given us a method whereby conclusions in many fields of human interest may be derived from and tested by the systematic study of facts. In none of its departments has science completely eliminated dogma—and the utterances of many scientists themselves smack of dogmatism. In industry the persistence of rule-of-thumb practices is evidence that managerial science is, as compared to physics or chemistry, on a relatively low level of development. Yet the method exists. And in so far as it has been applied to the formulation of policies and the institution of devices we may accurately say that management has become scientific.

The multitude of research projects which have been carried out in regard to special managerial problems within industrial establishments have succeeded in bringing to light a great many scientific principles. Most of these results, however, have related only to parts of industrial processes rather than to the entire range of processes within the establishments studied. It appears that the most comprehensive statement of scientific canons of management is that made many years ago by the genius and founder of Scientific Management, Frederick W.

Taylor.⁷ The following is offered as a concise and adequate outline of what is contained in the "Taylor System":

A. The improvement and standardization of the productive organization and of the material equipment of the plant. This involves the rearrangement of plant equipment to secure the quickest routing; the reorganization of the managerial force on the basis of the division of function; the use of cost accounting; the improvement of storekeeping methods and the adoption of mnemonic systems for classifying implements and manufactured products; the development of measuring devices such as the slide rule—and various other improvements over existing practice.

B. The improvement and standardization, for each job, of the acts or movements of workmen. Under the systems of management commonly in vogue, the management does not and cannot know the great mass of traditional and habitual rule-of-thumb knowledge which workers use; it can therefore give them little help or advice and must leave them to carry out each task as they see fit. But "among the various methods and implements used" there is always one method and one implement which is quicker and better than the rest; and this one best method and best implement can be discovered and developed only through scientific study and analysis of all the methods and implements in use, together with accurate minute time and motion study.

C. The standard task, based on an elementary time study and assigned by the planning department. The first uses of time study are in the elimination of unnecessary motions, the standardization of the operation, and the assignment to unskilled laborers, when possible, of routine operations not requiring skill. After the improvement of methods the movements are, if it seems necessary, timed again. The planning department then fixes a standard time—a "task" for each operation, based on observation of the minimum, average, and

⁷ *Shop Management* (Harper and Brothers, 1903) and *Principles of Scientific Management* (Harper and Brothers, 1911).

longest times required for the operation. Then an instruction card is made out, informing workmen what motions to perform and what standard task has been set up.

D. Functional foremanship in which the single supervisor is replaced by a number—ideally seven—of specialized teacher-supervisors (inspector, gang-boss, speed-boss, repair-boss, time-clerk, routing clerk, and disciplinarian) and the management substitutes friendly coöperation with workers for the suspicious driving of the system inherited from entrepreneur industrial organization.

E. The differential wage—a “bonus,” or higher piece-rate—is given to the worker who equals or exceeds the set “task.”⁸

The above outline is a summary of the principles which Mr. Taylor elaborated in his writings and which he discovered and first put into practice while he was Chief Engineer of the Midvale Steel Co.⁹ Yet they are applicable—and have been applied—to an industrial range much wider than the manufacture of steel and its products.

Here is science in a new-fashioned dress. But since it is method rather than material which identifies science, this recent development in industrial management is justly entitled to its claim to being scientific. Here are involved classification, analysis, synthesis and measurement. Classification consists in the establishment of standards and specifications, the division of functions,

⁸ Tugwell, R. G., *Industry's Coming of Age* (Harcourt, Brace, 1927), pages 31, 32. An elaborate description of the methods employed in scientific management is not within our purpose here. The reader is referred to Mr. Taylor's works. Excellent and more recent books dealing with methods and results are C. Bertrand Thompson, *The Theory and Practice of Scientific Management* (Houghton Mifflin Co., 1917) and Edwin E. Hunt (Ed.), *Scientific Management Since Taylor* (McGraw-Hill Book Co., 1924). A very complete and well written account of the genesis and growth of Scientific Management and the life of its founder is Frank B. Copley, *Frederick W. Taylor* (Harper and Brothers, 2 vols., 1923). There also is an important earlier literature by Harrington Emerson, H. L. Gantt, Henry R. Towne and others.

⁹ See Copley, Frank B., *Frederick W. Taylor*, Book III.

and the allocation of responsibility. Analysis comprises the study of methods and conditions of production in attempting to discover the best specific ways and means. Synthesis involves the tying together of processes through the routing of work and materials, their synchronization through the scheduling of particular operations, and the control of the entire establishment through the aid of records and accounting devices. Measurement ramifies the entire scheme, finding concrete application in such instances as time-and-motion studies, job specifications, and the selection of workers. Thus business judgments come to have scientific definiteness and certainty. No longer need management be confused by a hopeless array of interdependent variables. The specific managerial problem becomes: "What productive output, and at what costs, can be secured in my plant in which standardized workers, under standardized conditions and using standardized equipment, are turning out standardized products in standardized ways?" And the slogan of management has become: "A belt never breaks!"

All of the administrative elements which we have outlined can best be summed up by the single word, *precision*. And it all amounts directly to pecuniary precision. It is conceived and carried out in the interests of making larger profits for business enterprises. But these very pecuniary aims have as their result the more complete and effective utilization of productive resources and capacity in making goods and rendering services. This conclusion is supported by the following propositions:

1. The scientific management of business on a comprehensive scale is an influence which tends to prevent the creation of surplus plant capacity. Sales budgets and production budgets can be coördinated through a study of available facts. Projects aiming at additions

and betterments to plant and equipment can be planned long in advance in accordance with specific market trends of prices and costs. Enterprises are less likely, under the stimulus of boom conditions, to make additions to capacity which will become idle as soon as the boom is ended. An effective planning department aims at eliminating random and temporary peaks and slumps in operations. Efforts also are made to spread out the productive load more evenly over the various seasonal and cyclical periods. In a later part of this study it will be demonstrated that purchasers of industrial products are helping to make this spreading out process possible. Thus the hit-or-miss system of adding to productive equipment tends to be eliminated. New capital, which otherwise might be invested in only partly used equipment, is left in the market where it is available for enterprises which actually and steadily can use new equipment. We already have seen how the very way in which industrial establishments are coming to be organized is assisting in this more effective allocation of capital.¹⁰ Clearly if all industrial enterprises were scientifically managed, and if the precision attained were absolute, all enterprises would have their commitments of capital adjusted at the margin set by interest rates, and rates of profit on new investments would approach the rate of pure interest. No such general adoption or absolute precision has been attained. Yet the facts indicate that scientific management tends to secure a more effective allocation of capital. This means less unused or surplus plant capacity than would otherwise exist.

2. Scientific management conduces to a larger volume of production from a given amount of productive equipment. The fact that an establishment has no surplus capacity tells us nothing regarding the effectiveness with

¹⁰ Pages 108, 115, above.

which its productive equipment is being used. A plant which has a certain set of machinery and appliances may, under conditions of full-time operation, have an output of one hundred units per day. Another plant which possesses an identical assortment of machines and appliances, plus a systematic management, may be able to turn out two hundred similar units each day. Such increases in "maximum" output without additions to mechanical equipment actually have been achieved. They are attributable in part to a better knowledge of facts and potentialities as established through job analysis and the effective routing and scheduling of work in process.

3. Scientific management makes for the selection of workers in accordance with the requirements of the particular tasks which are to be performed, the training of workers in the best technique for the job, and the creation of incentives to greater productive effort by workers. The careful study of the requirements of a particular task leads to the formulation of job specifications—a set of ideal qualifications which should be approximated by the man who does that work. The careful selection of a workman through the use of physical and psychological examinations, interviews, and investigation of his previous experience and habits, should yield the man who, among those available, is best suited for the place. After the man is employed he is carefully instructed by a foreman or other functionary as to the responsibilities of his position, and is taught how to perform the work assigned to him in the least possible time and with the least possible effort. While he remains in the employ of the establishment, the management, so far as is consistent with its aim of making profits, offers him every possible assistance and inducement that may enable and cause him to increase his individual output. The lower labor costs

which the management is striving for often can be achieved only by improving the conditions and environment of the work, granting longer and more frequent rest periods, offering higher wages for increased production, or a combination of such devices. There always is a point at which "inducement" may change into "driving" and where the effort to secure more work from employees becomes unprofitable to the business and uneconomical from the social point of view. But if management reaches or passes that point it has lost sight of the facts and hence no longer is scientific. The actual tendencies in this connection will be indicated in a later section of this chapter. If we postpone consideration of such eventualities, it must appear at this point that scientific management makes for greater productivity of labor.

4. Scientific management increases the certainty and regularity of industrial operation by making interruptions to production caused by lack of materials, breakdowns, strikes, and lockouts less frequent. The coöperation of planning and stores departments normally assures an adequate supply of materials, and their availability when needed. Systematic inspection and the definite assignment of responsibility for the condition of each item of equipment to particular individuals reduce the probability of a mechanical breakdown. This risk is lessened also by the maintenance of standard belt tensions, boiler pressures, lathe rates, etc. In the case of certain items of key equipment (such as boilers and dynamos) scientific management often determines on the installation of duplicate facilities, thus rendering major breakdowns still less probable. In regard to the success of scientific management in reducing strikes and lockouts, one competent investigator has written: "The fact seems to be that in scientifically managed plants there has been a remarkable freedom from the turbulent and

distressing manifestations of industrial maladjustments characteristic of the last few years. This absence of labor trouble is due undoubtedly to a combination of causes; to a spirit of coöperation—the 'mental revolution' which is such a vital part of scientific management; to fair dealing; to a proper work environment; to a spirit of democracy; to increased individual production; to high wages unaccompanied by overexertion; and to a feeling on the part of the employee that his interest is being and will be looked after. It is due, indeed, to all these factors; it is inclusive of them all."¹¹

All of the tendencies indicated in the preceding propositions are growing and gaining momentum steadily and cumulatively. Scientific management is not content with original data and formulæ. It continues to seek new facts. This brings to light persistent and deep-seated flaws in organization and procedure. The discovery of these new facts makes possible greater comprehensiveness and effectiveness of management.

These propositions and their supporting evidence do not imply merely the reduction of surplus capacity and the more complete and effective use of productive resources and equipment. They also imply larger profits to industrial establishments. That is why scientific management exists. It may appear that if every enterprise comes to employ scientific management the pressure of competition and of social control will eliminate the differential profits which result from its adoption. But by that time the practices and technique of scientific management will have been greatly changed—though perhaps, as Mr. Taylor claimed, the underlying principles will remain the same. It is probable that some establishments always will be more efficiently operated than

¹¹ Farquhar, H. H., "Positive Contributions of Scientific Management," *Bulletin of the Taylor Society*, Vol. 9, No. 1, Feb. 1924.

others. Nor does the use of scientific methods of management eliminate the conflict between making goods and making money. The position taken here is only that the adoption of scientific management is primarily for the purpose of reducing unit costs; that the attainment of the lower costs depends upon increased outputs of goods through the more complete utilization of total productive resources; and, finally, that it follows from these conditions that the pecuniary interests of manufacturers are inducing them, as a whole, to make more goods or to render more services than was formerly the case. We have described this as a cumulative process within particular establishments. To see all of the potentialities in the situation we need also to know how general the use of scientific methods of management has become and is becoming throughout industry.

The expansion of scientific management cannot be measured in general terms. The lack of a common denominator makes it impossible to count the establishments which use "scientific management," or to state positively that one plant is scientifically managed and another is not. In describing the practices and conditions involved, we outlined the Taylor System—because it is most comprehensive and soundest as to underlying principles. But by scientific management we do not refer to the Taylor or any other "system." We mean instead a management which is based on the detailed study and analysis of facts, and which organizes and arranges processes, equipment, materials, men, products, time and space within the plant, by intelligent interpretation of the facts. Scientific management is not a thing; it rather is a condition. Its growth and spread can best be shown by reference to the expansion of the concrete elements which go to make the condition.

Among the most important constituents of scientific

management is cost accounting. This is the means by which the efficiencies of the various operating divisions of the enterprise are measured and pecuniary standards of performance arrived at. It also brings to light any sore spots which may exist within the productive organization by showing that certain costs are higher than they ought to be. By allocating determinable costs to specific processes and products, the modern methods of differentiating and classifying costs make possible an understanding of the internal operations of an industrial establishment which is not possible when total costs alone are known. Accountancy itself is a young science, and cost accounting is only in its infancy. Yet its growth in physical dimensions has been rapid. Large-scale industry has a pressing need for it as a means of control and its adoption has been widespread. The use of cost-accounting methods has been stimulated also by influences other than the business need for it *per se*. Governmental commissions, endowed by law with certain regulatory functions, have devised systems and required their use by public utility companies. Trade associations, motivated in some instances by aims which the courts have held to be in restraint of trade and consequently illegal, have induced large numbers of their member companies to adopt cost-accounting methods. The highly particularized income tax returns which are prescribed by the national and state governments have forced many industrial concerns to keep systematic cost accounts. In certain fields—of which the printing industry is typical¹²—technical conditions make the adaptation of cost-accounting methods extremely difficult. It remains true, however, that, under the pressure of internal business needs and outside circumstances, the use

¹² See Powell, Leona M., "Typothetæ Experiments with Price Maintenance and Cost Work," *The Journal of Political Economy*, Vol. XXXIV, No. 1, February, 1926.

of cost accounting in industry is steadily becoming more general.

There are a multitude of evidences to support the view that the expansion in the industrial use of cost accounting is typical of what is happening in regard to numerous other methods which constitute the best practices in scientific management. The systematic planning of work is on the increase to such an extent that one investigator has concluded that "to-day in industry an establishment without a planning room is very much of a back number."¹³ The layout of plant and equipment is receiving more attention to-day than has been the case in the past. New factory buildings are designed with a view to more than mere economy of construction or low cost per square foot of floor space. Arrangements for lighting, ventilation, routing of materials and work, placement of equipment, and the entire matter of coördination for efficiency are included in the engineer's plans for the new structure. This makes for rapid obsolescence of factory buildings; but the social effect is the replacement of inferior productive methods by better ones. Industrial and engineering journals print a constantly increasing volume of articles which describe the expansion of the use of time study, routing, scheduling, production control, and other such methods and devices.¹⁴ One of the strongest evidences of the spread of the general method of scientific management is supplied by the more important place it has assumed in the curricula of technical schools and collegiate schools of business. The recent and enormous increase of instruction along this line has come in response to an industrial demand for it.

¹³ Person, H. S., "The Contribution of Scientific Management to Industrial Problems," *Bulletin of the Taylor Society*, Vol. 8, No. 3, June, 1923.

¹⁴ See, for example, the editorial article, "Smoothing Production's Path," *Factory, the Magazine of Management*, January, 1926.

Many of the modes and devices of scientific management in use at the present time are quite different from those conceived by the early participants in the "scientific management movement." Others, however, remain virtually unchanged. A distinguished engineer, long acquainted with scientific management and widely familiar with industrial practices, sums up the present status of the "Taylor System" as follows:

Few, if any, enterprises will be found to-day that are organized after the model set up by Taylor at Bethlehem. But combinations of his methods in endless variety are to be found all over the country. It will be remembered that Taylor did not claim that he had invented a number of new management mechanisms. Most of the elements of his system such as cost finding, inspection, routing, dispatching, etc., were already in use in isolated and crude form. He simply took these mechanisms, refined them, added a few new ideas of his own, molded them into a new philosophy of management, and illustrated this philosophy by a concrete example which produced the practical results desired. Without this concrete and successful example it is doubtful whether the movement would have readily gained headway against the inertia of old habits and inefficient practices, and Taylor in all probability would have been remembered only as another idealist.

But when others tried to use these methods exactly as Taylor had enunciated them it was found that they did not fit the circumstances, and after some rather disastrous experiences in trying to make the circumstances conform to the classic example at Bethlehem, the thoughtful manager began to select those mechanisms that fitted his needs and ceased to worry because he could not use all the mechanisms employed by Taylor. . . . Any one well informed concerning Taylor's pioneer work will find no difficulty in identifying some of his methods in almost any up-to-date manufacturing plant in this country. And in many of them he will find some of Taylor's mechanisms of management almost unchanged from the original. Perhaps the most common elements to be

found are those of rate setting on the basis of accurate time study, and the planning and dispatching of operations on the basis of a prearranged time schedule.¹⁵

Dean Kimball's summary takes account of an important phase of the history of scientific management which often is ignored by its less informed champions. The methods and devices which traditionally have been associated with the movement have not always been successful in their application to specific enterprises. There have been a number of "scientifically" managed concerns which have been worsted in competition with their less scientific competitors. These cases supply evidence—if any were needed—that the modes and devices of management which are successfully used under one set of conditions may not give the same results under a different set. It is flying in the face of the commonest axiom of science to expect them to. Scientific management cannot, by definition, merely substitute a new set of rules of thumb for an old one. Nor does it in practice. Although "Taylorism" has had some of the spiritual elements of a gospel, and although there has been a tendency among some of its advocates to proselytize, the people who are taking the most active part in creating a technique of management are not absolutists or fundamentalists. They do not claim to have perfected a "system"; that is why they continue to work with their

¹⁵ Kimball, Dexter S., "Has Taylorism Survived," *Mechanical Engineering*, Vol. 49, No. 6, June, 1927. Interesting particular evidences of the growth and spread of improved methods of management may be gained from comparing the report of a sub-committee on administration of the American Society of Mechanical Engineers, "The Present State of the Art of Industrial Management," *Transactions of the A. S. M. E.*, Vol. 34 (1912), pages 1131-1229, with the paper by L. P. Alford, "Ten Years' Progress in Management," *Transactions of the A. S. M. E.*, Vol. 44 (1922), pages 1243-1296. The international scope of the "scientific management movement" is indicated by the report on the World Economic Conference at Geneva (May, 1927), by Edward E. Hunt, "Scientific Management and World Economics," *Bulletin of the Taylor Society*, Vol. XII, No. 3, June, 1927.

problems. Their efforts toward discovery and invention of flexible administrative methods give promise of future achievements which will surpass the already large recorded accomplishments. A not entirely fantastic guess is that these men may recapitulate, in history, the positive cultural contributions of the seventeenth-century empirical scientists or of the eighteenth-century inventors.¹⁶

While scientific methods of management have been coming into wider and more general use they also have come to be more effectively applied within the establishments using them. The early popularity which attached to the "scientific management movement" was injured to a great extent by persons who claimed to be its votaries and champions. Many of the "efficiency experts" of a decade or two ago (and perhaps some of those of to-day) were actual enemies of the technique which they pretended to be masters of. Their greatest sin was simply that they were neither "efficient" nor "expert"—and by no terminological stretch could they be described as scientists. They might more accurately be called magicians. What they sold to their clients were bags of tricks rather than scientific methods. They waved wands, spoke magic words, introduced an assortment of charts, card indexes, and stop watches, collected fat fees, and departed, leaving their "systems" to almost certain failure. Charlatanism of this character has been the greatest obstacle to the advance of genuinely scientific methods of management.¹⁷ At present, however,

¹⁶ The modesty, humility, integrity, and scientific imagination which characterize many of the workers in this field are reflected in articles and reports published in the *Bulletin of the Taylor Society*.

¹⁷ This condition led Mr. F. W. Taylor to insist, for many years, that there were only four industrial engineers, Carl G. Barth, H. L. Gantt, H. K. Hathaway, and M. L. Cooke, who were qualified to install scientific methods of management. See Copley, F. B., *Frederick W. Taylor*, Vol. II, pages 387-389.

conditions are markedly different. Industrial establishments organize for scientific management. The highly involved and technical character of the method necessitates such preparation. Instead of imposing a set of devices on the enterprise from the top, the scientific method is injected throughout the organization. The executive and administrative personnel and also the wage earners are skilled in such branches of the method as come within their respective jurisdictions. This is the *sine qua non* of scientific management.

The Efficiency of Labor

When we turn from the increased internal efficiency of industrial establishments which is attributable to management, and consider the changes in the efficiency of labor, it becomes evident that we no longer have any definite and unifying pattern to govern our analysis. Scientific management is composed of elements which are determinable and whose extensions are measurable; the policies and practices of laborers are not. It is equally clear that, since management is the directing influence in all business enterprises, it sets the conditions which go far to determine the efficiency of labor. Thus, what has been said concerning the increasing efficiency of management impinges upon and cuts across our examination of labor efficiency. There is, however, a wide range of pecuniary and productive efficiency which can only be studied through an examination of prevailing attitudes and conditions of laborers rather than those of employers and managers. In the most scientifically managed of establishments the workers are as much (ideally, perhaps, even more) concerned with their individual and collective interests as they are in a less efficiently operated shop. It is to be remembered that a laborer's "efficiency," from his own all-important point of view,

is determined by his ability to command high wages, to have as much leisure as he desires, to obtain the best possible working conditions and environment, and to make secure the permanency and regularity of his job.

As regards these objectives, and viewed as a whole, industrial workers in the United States appear to have achieved a considerable success. That "efficiency," taken in this sense, is not a universal condition in this country is evidenced by the deep-seated defects in certain of our industries—of which New England cotton mills and the general situation in coal mining are outstanding examples. Yet a general improvement along each of these lines has been made. The facts of these developments are so well known as to require only a bare mention here.¹⁸

¹⁸ Professor Alvin H. Hansen's index of real wages in the United States (*American Economic Review*, Vol. XV, No. 1, March, 1925), shows an upward trend of relatives as follows: 1860, 57; 1870, 71; 1880, 77; 1890, 96; 1900, 101; 1910, 100; 1920, 112; 1923, 129 (1913=100). In the same study an average annual increase in real wages of 1.04 per cent (compounded) was found for the period 1820-1923. There are numerous evidences that, while real wages have been on the rise, there has been a concomitant decrease in the average length of the working day and week. As recently as 1914, 74.7% of all employees of manufacturing establishments worked fifty-four hours or longer each week. In 1923 only 32% of such employees worked as long as fifty-four hours a week (Department of Commerce, Bureau of the Census, *Biennial Census of Manufactures*, 1923). There is no accurate long time series of statistics of industrial accidents. There have been declines in the accident rates of numerous establishments and industries. Yet the best figures available indicate an increase in the total number of accidents for all industries—a total which exceeded 10,000 fatal and 1,531,000 non-fatal accidents in 1924. (Ethelbert Stewart, "Industrial Accidents in the United States," *The Annals of the American Academy of Political and Social Science*, Vol. CXXIII, No. 212, January, 1926.) The increase in numbers shown may be due to more complete reports in recent years. Or, granting that the number of accidents has increased as indicated, it appears that the increase of accidents has been proportionally smaller than the increase in physical production. It has been discovered also that, in certain industries, the accident rates are lower in the large establishments than in the smaller ones. Since these are industries favorable to large-scale operations we may expect a decline in the accident rates to proceed *pari passu* with the growth in size of establishments.

The fact that workers have been able to improve their personal situations in the economic order tells us nothing concerning the relative state of their productive efficiency. The gains in the direction of higher wages, shorter hours, increased certainty of employment, and improvement of working conditions and environment, may have been made possible by better management and technology in industry, larger accumulations of capital, and broad social influences which lie outside of industry itself. The actual securing of the gains may have been due to the stronger bargaining position of laborers themselves. It is evident that all of these factors have been influential; all of the industrial tendencies traced in this study—as well as a great many other elements which are economic and social—have contributed to the creation of the improved status of labor. But this is neither the whole story nor the matter with which we are chiefly concerned at this point. The tendencies of laborers in regard to actual productive effort is one of the foci of the economic anomaly whose manifestations and modification we are seeking within the arrangements and methods of industry. We wish to know whether laborers, in addition to becoming better able to achieve their own ends, also are becoming more efficient and effective producers. Measurement is again made difficult by the lack of a common denominator. In

(Cf. article by W. Dean Keefer, Director, Industrial Division, National Safety Council, *Factory*, January, 1927). Improved sanitation and greater attention to working conditions appear to have reduced industrial and occupational disease. Statistics of labor turnover are not comprehensive and are so greatly affected by seasonal and cyclical conditions in industry as to obscure the general trend. A number of devices are coming into fairly general use, however, whose effect is to make the worker's tenure of his job more secure. Many of the changes which are thus briefly summarized here have been influenced by social control. But be the causes what they may, and even after making the adjustments which inevitably are necessary in order to make statistics square with all the facts, it appears that progress has been made toward achieving the personal and collective ends of industrial wage earners in the United States.

modern industry it seldom is possible to tell what quantity or quality of the goods produced or services rendered is attributable to laborers as distinct from management and plant equipment.¹⁹ And though it is possible to identify in individual workmen definite qualities which represent productive efficiency, it is not possible, from these qualities, to generalize in regard to the actual productive effectiveness of laborers. A workman possessing the highest of qualifications may not utilize them—may even positively retard or restrict production. As a matter of fact restriction and limitation of output by laborers generally is conceded to be a fairly common condition in industry to-day.

It appears, however, that there are tendencies within industry which are reducing and partially eliminating the restrictive activities and practices of workmen. As regards this phase of the present study, our tentative conclusion is that as industrial laborers have been successful in achieving their own individual and collective ends, they also have become, and are becoming, more efficient and effective in producing goods and rendering services. This general conclusion rests upon the following specific and detailed propositions:

1. The widespread adoption of scientific methods of employment and of industrial management has caused laborers to become more efficient and effective producers. To refer again to the enhancement of internal productive efficiency by scientific management may give the appearance of laboring a point. Yet as we view production from the standpoint of workmen instead of from that of owners and managers we discover that the prob-

¹⁹ The gross gains in productivity per man-hour in various manufacturing industries are presented in studies by the Bureau of Labor Statistics, *Monthly Labor Review*, commencing with the issue of July, 1926. A convenient summary of the findings of these studies is given by R. G. Tugwell, *Industry's Coming of Age* (Harcourt Brace, 1927), pages 1-9.

lems of potential and actual output have an entirely different incidence. A laborer possesses individuality and has his own interests, entirely apart from management. He may, on his own account, be a square peg in a round hole. He may, because of lack of aptitude or of training, be a complete failure or only moderately successful at the task assigned him. Yet he might be markedly successful if he were given a different job. Or, again, a thoroughly qualified laborer may passively reduce output by loafing on the job or actively restrict it by "soldiering" or *sabotage*. The measurement and selection of employees by specialized personnel departments and their thorough instruction in the techniques and responsibilities of their positions reduces to a minimum the number of "square pegs" in an establishment. Time-study, scheduling, and adequate supervision tend to reduce loafing and "soldiering."

Although the general level of labor productivity has been raised by scientific methods of management it also is true that these methods have been directly opposed to the personal interests of the less efficient and less effective workmen. Accurate methods of selection may prevent them from getting the jobs they want. Or, if they get the jobs, the exposure of their lack of qualifications may cause them to lose their places. This fact probably accounts for a part of the traditional opposition of laborers to scientific management. Another reason for the obstructionistic attitudes of workmen toward the "management movement"—one having a greater social justification—comes from unscientific procedure and actual abuses which can be traced in the main to quacks and charlatans who claimed to be "management experts." Many mistakes have been made, and many vicious practices have been disguised as science. There has been a great deal of justice in the objections of workers to "driv-

ing" tactics in industry.²⁰ Yet true scientific methods of management involve, above all else, the establishment of *reasonable* standards of performance. In its discovery of facts scientific management has thrown much light on the causes of fatigue and the means of its avoidance.²¹ It is interesting to observe that laborers themselves have been known to use time study as a means of showing their employers what it is "reasonable" to expect of them.²² The adoption of methods of management which are truly scientific has come primarily from the pecuniary aims of the owners of industry. Yet increased productivity of labor and improved industrial relations are among the more important ways in which scientific management pays. Back of it all lie possibilities for social betterment. There is more of the practical vision of an engineer than of mere sentimentality in the declaration of F. W. Taylor: "I am, of course, and ought to be, interested in the material welfare of the companies who are using scientific management; but if the result of my work were merely to increase the dividends and the prosperity of the manufacturing companies, I certainly should not devote my time to this object. Scientific management is, for me, then, primarily a means of bettering the condition of the working people."²³

The positions taken by many laborers and the policies adhered to by many labor organizations continue to be

²⁰ For a statement of the laborers' grievances, and for an excellent synthesis by F. W. Taylor of the postulates of scientific management regarding industrial relations, see *Hearings Before Special Committee of the House of Representatives to Investigate the Taylor and Other Systems of Shop Management*. The argument on both sides of the issue is presented in Hoxie, R. F., *Scientific Management and Labor* (D. Appleton and Co., 1921).

²¹ See, for example, Merrick, Dwight W., *Time Study for Rate Setting* (The Engineering Magazine Co., 1919).

²² Person, H. S., "The Contribution of Scientific Management to Industrial Problems." *Bulletin of the Taylor Society*, Vol. 8, No. 3, June, 1923.

²³ Copley, F. B., *Frederick W. Taylor*, Vol. II, page 236.

barriers to the spread of scientific management in industry. This opposition appears, however, to be diminishing. At present the use of scientific management has attained the highest degree of success in two types of industries and establishments—those in which no strong unions exist, and those in which powerful unions are themselves sponsoring, and participating in, scientific management. Conditions prevalent in the automobile industry are typical of the first of these classes. The second is exemplified by the plan in use in the machine and repair shops of the Baltimore and Ohio Railroad.

The reason for the partial *volte-face* of organized labor's policy toward scientific management has been succinctly stated by the late President of the American Federation of Labor: "One of the early attempts to apply science to labor questions came with types of scientific management that treated wage earners as machines or simply laboratory material. Organized labor resisted—that resistance helped to humanize concepts and methods in management, until now the human nature of the workers is recognized as the fundamental factor in determining policies. . . ." ²⁴

2. The steadily increasing mechanization of productive processes makes for greater productive effectiveness on the part of laborers. This proposition does not mean merely that the use of machinery in industry has enhanced the productivity of labor. It means instead that the use of automatic machines and the growth of continuous process industries (such, for example, as modern steel making and glass bottle manufacturing) are forces which cause workmen to exert themselves in the performance of their tasks—whether or not they will it so. More and more in factory production machines are

²⁴ Address of Samuel Gompers before the Preliminary Conference on Industrial Research, Washington, D. C., Nov. 12, 1920. Quoted by Hunt, E. E., *Scientific Management Since Taylor*, page xiv.

coming to set the paces which men must follow. This is a tendency of modern industry which has caused alarm to many thoughtful persons. Yet the condition itself is not essentially an evil one. Its potentialities for individual and social detriment depend on whether it actually is employed in a detrimental way. Even the pecuniary ends of the owners of industry would not be served by the creation of a Frankenstein monster. And, confining our attention to the point in hand, it is patent that workers who perform single operations in continuous processes, or who are tenders of automatic machines, have little opportunity to loaf or to "soldier" on the job. It sometimes happens that the pace set by a machine is not sufficient to utilize the entire efficiency of the fastest and strongest workmen. Yet, in view of the fact that what each workman does is merely a part in an entire productive process, it is evident that such mechanization tends to secure a larger total output of effective energy than would be possible in its absence.

At this point we come to grips with one of the component problems of the economic anomaly. The social interest in securing a larger and better supply of goods usually is furthered by the elaboration of machine processes. The adoption of a particular mechanical contrivance in a given industry almost invariably runs counter to the individual and collective interests of some class or group of laborers. Industrial workers have learned by painful experience that mechanical innovations are dangerous to them. The hazards which characterize the status of wage earner are intensified by the ever-present prospect of being deprived of the benefits of years of experience and hard-earned skill. The danger of being forced out of employment or of having to work in a less desirable occupation or for smaller wages is very real to skilled and semi-skilled workers alike. For these

reasons the entire industrial era, since the English Luddite riots of the early nineteenth century, has been marked by opposition by laborers to the expansion of industrial mechanization.

The replacement of labor by machinery is not invariably accompanied by consequences which are unfavorable to the laborers concerned. Thus in the printing industry the introduction of the Mergenthaler linotype machine, which would do the work of four experienced hand compositors, threatened a large displacement of labor and of skill. Yet the actual consequences were slight because the reduced cost of printing gave rise to a greater demand for it. Many of the former hand compositors became machine operators and the wages and the hours of the handworkers improved steadily during the period in which machines were being introduced.²⁵ The same general results followed the introduction of the semi-automatic bottle machine; glass-blowers were benefited, in some respects, at least as much as they were injured in others by the change of method.²⁶ These cases, however, are exceptional. The mechanization of processes usually makes for actual harm to some group of workers.²⁷

The opposition which has, until recently, been the usual attitude of wage earners toward the introduction of

²⁵ Barnett, George E., *Chapters on Machinery and Labor* (Harvard University Press, 1926), Chapter I.

²⁶ *Ibid.*, Chapter III.

²⁷ *Ibid.*, Chapter V. See also Haber, William G., "Workers' Rights and the Introduction of Machinery in the Men's Clothing Industry," *Journal of Political Economy*, Vol. XXXIII, No. 4, August, 1925. The broad facts of recent displacement of labor in manufacturing industries by machines and improved methods and organization are presented by the Bureau of Labor Statistics, *Monthly Labor Review*, May, 1927, pages 16-17. The summary of findings is as follows: "Between 1919 and 1925 the number of wage earners decreased 6.7 per cent, yet population increased 9.9 per cent. Wage earners per 1,000 population in 1925 were 16.1 per cent fewer than in 1919. However, while the number of wage earners decreased between 1919 and 1925, there was an increase of 25 per cent in the quantity of goods produced."

machinery, has not succeeded in preventing the adoption of labor-saving appliances. The inability of labor organizations to block the mechanization of industry was frankly admitted by Mr. G. W. Perkins, President of the Cigar Makers International Union, in his report to the 1923 convention of the union:

"No power on earth can stop the at least gradual introduction and use of improved machinery and progressive methods of production. Any effort in that direction will react against those who attempt it. Our own condition proves that our efforts at restriction were futile and ineffective and injurious. Without an exception, any organization, since the beginning of the factory system, that has attempted to restrict the use of improved methods of production has met with defeat."²⁸

So broad a declaration by a leader of organized labor may lead to the observation that some groups of workers appear to be markedly successful in preventing or hindering the encroachments of machines. The very existence of certain of the "hand trades" seems to be due to this successful resistance. Yet the condition is a transitory one. Just as planing mills have almost driven the art of cabinet making out of existence, the factories which turn out "ready cut" houses are in active competition with carpenters. The new method of joining steel beams by welding instead of by riveting may lead to the fabrication of larger steel units at the mills, with resulting evil consequences to the structural steel workers. Increased mechanization tends to lead to continuous processes—and it seems probable that the time will come when even the powerful building trades must give way, at least in part, to machines and machine operators.

The policies of various trade-unions in regard to the

²⁸ Quoted by Haber, William G., *loc. cit.*, page 393. Statements similar to that of Mr. Perkins have been made by numerous leaders of organized labor.

introduction of machinery have been far from uniform. They have been in part preventive, in part remedial.²⁹ The growing consciousness of the futility of direct opposition has given rise to a recent policy of compromise—of regulation rather than restriction. By this means it is hoped to avoid the evil consequences of mechanization to the laborers, without actively impeding the introduction of machines. The workers in the men's clothing industry appear to have gone farthest in the development of this policy. Regulation has been made effective in this instance through the ordinary means of collective bargaining. Tribunals are established for the industry and charged with the responsibility of protecting the stated rights of both employers and wage earners in the event of changes in productive methods. The object of the plan is pointedly set forth in a decision handed down by one of these judicial bodies: "It is the intent of the agreement to permit the management a free hand in making improvements and changes in the methods of manufacture, but this is not to be done at the expense of the workers."³⁰ Thus it is necessary for the management to supply equally good jobs to laborers who may be displaced or otherwise adversely affected by the installation of machinery or other change in working conditions. By this means is the rule of reason applied to a situation which has, at other times and places, led to injury and strife. And thus, also, are the personal and collective interests of the workers in their jobs brought more nearly into harmony with the pecuniary interests of employers and the productive interests of society at large. A method has been devised which warrants the consideration of other bodies of organized workers.

²⁹ Cf. Barnett, George E., *loc. cit.*, Chapter VI.

³⁰ *Hart, Schaffner and Marx Board of Arbitration*, Case No. 38, New Series, January 23, 1924. Quoted by Haber, W. G., *loc. cit.* See this study for a complete description of the plan.

Mechanization continues and increases. Automatic machines and continuous processes are evolved. And, in the development, the productive effectiveness of laborers tends to be enhanced.

3. Greater use is being made of incentives which stimulate increased productive effort on the part of wage earners. It has been pointed out by numerous students and observers that the conditions of factory production have destroyed much of the interest which laborers formerly had in the productive welfare of the establishments in which they worked. Many employers and managers, as well as laborers themselves, have been thoroughly aware of this fact. The need—from the respective points of view of those directly concerned—for a restoration of this interest has given rise to a multitude of remedies. All of these plans and proposals have rested on the reasonable assumption that the personal aims and aspirations of laborers must be appealed to; they must be assured that their efforts will be rewarded. The inevitable mistakes have been made. In so far as the plans adopted have been of a “driving” character and as promises have not been fulfilled, laborers have opposed rather than coöperated, and failure has been the usual result. But this rather crude trial and error experience has done much to teach both managers and workmen the directions in which success may be achieved and has led them to discard methods which are ineffectual or positively injurious. Thus, for example, most of the early profit-sharing devices employed in the United States have been rather thoroughly discredited.

It is obvious that one way to arouse a workman's interest in his job is by causing his actual productive efforts to be reflected in a substantial way in his pay envelope. The conventional time-wage plans have not the flexibility necessary to such inducement. Ordinary

"piece-rate" methods have a tendency toward "driving" and also often make wage earners suspicious of a pending reduction of the rates. The study of the problem of wage-incentive has given rise to the elaboration and adoption of a number of ingenious and more or less successful "bonus" and "gain-sharing" systems of wage payment. The earlier plans devised by such pioneers as Taylor, Gantt, Halsey, Rowan and Emerson are in operation in many industrial plants to-day.³¹ Others have created new wage devices which are more closely geared to their peculiar requirement or have adopted modifications of the older plans.³² The experience of many establishments has been that there is, from the standpoint of promoting productive effectiveness, a "best method" of wage payment. The matter of wage-incentive has not received the attention that it deserves from industrialists. Yet the discovery and use of "best methods" is going forward more rapidly at present.

The prospect of securing higher wages for improved performance is not, in itself, a complete or adequate inducement to productive effort. One of the greatest incentives that a worker can have is an opportunity for promotion. "Blind alley" jobs tend to discourage the laborers employed at them. The only kind of work necessarily and inherently monotonous and uninspiring is that which offers no "future." Even potentially higher wages will not keep the workers' interest and ambition alive. Only recently have managers, engineers, and social

³¹ For an appraisal and comparison of various wage plans actually in use see Anderson, A. G., "Successful Wage Payment Plans," *Manufacturing Industries*, Vol. 12, No. 1, July, 1926. Merrick, Dwight V., *Time Studies for Rate Setting* (The Engineering Magazine Co., 1919), pages 333-354, describes modes of determining unit-times and unit-wages and also of ascertaining the plan of wage-payment which will be most effective under the given conditions.

³² See, for example, Underwood, Chas. N., "A Foreman's Bonus for Maintaining Quality and Preventing Waste," *Manufacturing Industries*, Vol. 12, No. 5, November, 1926.

scientists become aware of the extent to which the lack of a "future" has come to obtain in modern industry and realized the seriousness of its effects. In the present circumstances of industry it probably would not be possible to eliminate all "blind alley" jobs. But the steady expansion of industrial enterprises along both horizontal and vertical lines creates a greater opportunity to offer advancement to qualified workmen. In addition to the increased flexibility which is due to the large size of such establishments, the more elaborate division of labor which they involve makes more promotions available and makes easier the step from a lower job to a higher one. Under these conditions also it is clearer than ever that such promotion pays the employer as well as the wage earner. Plans for the systematic advancement of workmen as a reward for meritorious service and as a means of securing their best abilities for the enterprise have been devised and are steadily coming into more general use.³³ The creation and application of such plans are converting many formerly "futureless" occupations into jobs which, by their very promise of something better to come, encourage the laborer to increased productive effort.

Another direction in which advance has been made toward increased interest by laborers in the productive welfare of the establishments employing them is called by the somewhat vague name, "industrial democracy." The connotations of the phrase are so broad as to cause much ambiguity and confusion. Thus it has been used in the past to describe a variety of industrial and social conditions ranging all the way from any kind of works committee to "dictatorship of the proletariat." At

³³ An excellent description and appraisal of such a plan in practice is given in the article by F. B. Gilbreth and L. M. Gilbreth, "The Three Position Plan of Promotion," *The Annals of the American Academy of Political and Social Science*, Vol. LXV (1916), pages 289-96.

present, however, discriminating students of economic affairs are in fairly close agreement as to the denotation of the expression. In this interpretation it is taken to mean an ideal and a method which aim to secure equality of opportunity through the effective extension of suffrage to all of the participants in industry.⁸⁴ In practice its scope has been limited almost exclusively to intra-company affairs. This general ideal and method are involved in every genuine attempt at industrial democracy—although the devices, the plans of organization, and the constitutional purposes and limitations vary widely among different establishments. In each instance certain fundamental rights of owners and of wage earners are stipulated and machinery established for the protection and preservation of those rights. Thus a prevention of the domination, or exercise of autocratic control, by one group or the other is sought. Circumstances peculiar to the contemporary industrial system which have made such adjustments necessary are fairly obvious.

It seems clear that industrial democracy, considered in this light, is more important as a modern tendency than as a present-day condition. An estimate of its efficacy, along the lines of the present study, is made difficult by the very newness of the movement. That the ideal and method have spread among industrial establishments during the years since the war there can be no doubt. Thus the number of works councils in operation increased from 151 in 1919 to 212 in 1924—although the total for the latter year was somewhat lower than the peak reached in 1922.⁸⁵ Many of the attempts which have been made

⁸⁴ Cf. the definitions of A. B. Wolfe, G. D. H. Cole, W. P. Hapgood, and others quoted by Lauck, W. Jett, *Political and Industrial Democracy* (Funk and Wagnalls, 1926), pages 55-57.

⁸⁵ National Industrial Conference Board *Special Report*, 1925. Figures cited by Lauck, W. Jett, *loc. cit.*, page 140. The numbers represent companies rather than plants. Many of the companies have numerous plants and equally numerous works councils.

along this line have been abandoned for reasons of dissatisfaction of laborers or employers or both. The greatest effectiveness and permanence seem to accompany those plans which are instituted by the coöperative arrangement and agreement of both parties. The success or failure of particular schemes and devices depends, of course, on how well they are adapted to the special requirements of the establishments concerned. As greater precision and understanding are reached the better adaptation of the plans must lead to their greater success.³⁰

In spite of the obvious difficulties which prevent any thoroughgoing appraisal of this development in terms of incentive to production by laborers, certain broad tendencies are fairly evident: (1) In so far as the insecurities of wage earners are made, at least in part, subject to their own control, their willingness to coöperate toward achieving the productive ends of the enterprise is stimulated. (2) Individual and group loyalty tend to be enhanced by the creation of a sense of responsibility. (3) A more judicious attitude of workmen toward matters of internal policy is made possible through their more thorough acquaintance with the problems of management. (4) In so far as former suspicions of both wage earners and managers toward each other are removed or allayed, an improved morale accrues. (5) The increased attractiveness of the establishment to workers may tend to reduce labor turnover and to make possible the raising of per-

³⁰ With the details of the plans themselves we are not concerned in this study. Brief descriptions of leading plans are given by Lauck, W. Jett, *loc. cit.* For more extended treatments of particular methods see Selekmán and Van Kleek, *Employees' Representation in Coal Mines* (Russell Sage Foundation, 1924); Selekmán, Ben. M., *Sharing Management with the Workers* (Russell Sage Foundation, 1924); Howard, Earl D., pamphlet entitled "The Hart, Schaffner and Marx Labor Agreement"; Filene, Edward A., pamphlet entitled "The Way Out." See also articles in *The New Republic*, "Golden Rule Nash" (March 10, 1926) and "The B. and O. Plan" (August 4, 1926).

sonnel standards by seeking higher qualifications in the applicants for such openings as occur.

Another way in which the relationships of wage earners to their jobs are being modified to-day is through the ownership, by employees, of stock in the establishments which employ them. This condition is in part a feature of the various plans of industrial democracy. Yet a large part of its growth has been in establishments where no such general ideal or method exists. The best estimate of the extent of stock ownership by employees places the total at substantially in excess of \$700,000,000. And it is probable that, if all the facts could be known, the amount would be materially higher.⁸⁷ Thousands of employees of such concerns as the General Electric Co., the American Telephone and Telegraph Co., the Standard Oil Co. of New Jersey, the International Harvester Co., as well as smaller numbers in hundreds of other enterprises, are stockholders of the companies for which they work.⁸⁸ A large part of such stock ownership has been fostered or actively supported by the companies themselves—in some cases to the extent of giving stock to employees.

The results of this device are, in general, more debatable than measurable or demonstrable. From the standpoint of a worker's own interest much can be said against a plan which so greatly concentrates his risks by making the security of both his savings and his job dependent on the success of a single enterprise. The effectiveness of this method of improving labor morale is likely to continue only as long as the stocks do not decline in value. Yet, as regards the results of this device as an induce-

⁸⁷ Foerster, R. F., and Dietel, E. H., *Employee Stock Ownership in the United States* (Industrial Relations Section, Princeton University, 1926), page 62.

⁸⁸ *Ibid.*, pages 62-65. See this study for a description and analysis of many of the plans which are in use.

ment to greater productive effort and care by workers, most of the employers using it report favorably. The encouragement of thrift, the improvement of relations between management and employees, and the creation of a greater interest in the success of the business are given as tangible and beneficial results.³⁹

Under the conditions of modern industry, and influenced by numerous devices and policies such as we have reviewed, there appears to be a growing willingness and desire on the part of many wage earners to contribute in an active way to the improvement of productive processes. The claims which often have been made in this regard by representatives of organized labor are typified by a statement of the Vice President of the American Federation of Labor:

The average workman develops a technical knowledge of his job and thinks of ways his work might be better done, waste eliminated, and time and energy saved. Because of his intimate contact with job details and his specialized knowledge, he can suggest improvements which are outside the experience of management and so make a specialized contribution. When he has no channels through which to voice his ideas they are lost to the industry. But if the means can be found to make these ideas available for practical use, a working force of men intent upon increasing efficiency can be developed and a chance for all men to find creative expression in their work will be provided.⁴⁰

That such declarations are not empty verbiage is evidenced by the fact that many industrial establishments actually are receiving helpful suggestions from their employees—and making use of them. Not only has the

³⁹ *Ibid.*, pages 67-69. These opinions by employers are interesting, but not entirely conclusive. Authoritative statements of wage earners concerning this device are, unfortunately, not available.

⁴⁰ Woll, Matthew, address before meeting of American Society of Mechanical Engineers, Dec. 8, 1926. *The New York Times*, Dec. 9, 1926.

"means" been found to "make the ideas available," but some concerns offer positive inducements which encourage workers to study their jobs and to submit plans for improvement. The experience of one company shows what is being done and indicates wide possibilities. In 1926 the General Electric Company had in its employ an average of about 55,000 persons. During the year 11,325 suggestions were received from employees; 3,433, or more than thirty per cent, were adopted. The company awarded approximately \$40,000 to the authors of proposals which the management regarded as practicable.⁴¹ Such devices as this go farther than the mere promotion of better productive methods. They also tend to cause workmen to study their jobs more carefully and thus to become more proficient. Another accompanying tendency is the stimulation of a positive interest and a consciousness of responsibility.

In this discussion of the attitudes and accomplishments of labor no mention has been made of a large assortment of special contrivances and arrangements which exist in various industrial establishments and which have as their aim the promotion of productive efficiency and effectiveness on the part of laborers. We have examined only the broader trends of such efficiency and effectiveness as they are related to the three major divisions of the industrial complex—management, equipment, and laborers themselves.

Nor have we, in our argument, sought to prove that there has been any miraculous change or physically induced metamorphosis in the nature of wage earners. They continue to be exactly as acquisitive, and just as far from purely altruistic, as everybody else. They are

⁴¹ Dinkins, H. H., "Encouraging Employees to Make Suggestions," *Machinery*, Vol. 33, No. 5, January, 1927.

guided by their own interests, or by what they believe their interests to be. In their status as workers they are inclined to give consideration to the interests of society or employers or their fellow-workers only because it pays them to do so or because they cannot avoid doing so. If their own ends appear to be served best by the withholding of productive effort or by limiting or restricting production, they tend to do all that they can to serve those ends. We have offered evidence, however, which indicates that such conditions and such practices are becoming less common than they formerly were. After examining this evidence we adhere to the conclusion which we already have tentatively advanced. It is that as industrial workers have been successful in achieving their own individual and collective ends, they also have become, and are becoming, more efficient and effective at producing goods and rendering services.

Modern Technology

The broad importance of science to industry and the controlling influence which machine processes and laboratory methods exert on the contemporary economy have been so widely observed and discussed as to need no insistence or emphasis here. It has been well said that "under the new order the first requisite of ordinary productive industry is no longer the workman and his manual skill, but rather the mechanical equipment and the standardized processes in which the mechanical equipment is engaged."⁴² It is patent that whatever degree of internal efficiency an industrial establishment may achieve is, in large part, a derivative of technological circumstances within the plant.⁴³ It is evident also that

⁴² Veblen, Thorstein, *The Vested Interests and the State of the Industrial Arts* (B. W. Huebsch, 1919), page 37.

⁴³ "Industrial efficiency," let it be remembered, is here used to signify a personal and acquisitive fact or potentiality.

the ability of such an establishment to produce goods or to render services is, to a great extent, a resultant of the same conditions.

The present state of the industrial arts is—or, more accurately perhaps, aims to be—a teleological and systematic arrangement consonant with a material culture which rests on private property and individual initiative. Modern technology is primarily and predominantly a means to acquisition. It not only is used in promoting the ends of those who control industry; it actually is owned by them. Professor Veblen has summed up the relationship in a concise manner:

. . . . These material means of industry (equipment and natural resources) and the state of the industrial arts which these material means are to serve, can be turned to productive use only so far and on such conditions as the rightful owners of the material equipment and resources may choose to impose; which enables the owners of this indispensable material wealth, in effect, to take over the use of these industrial arts for their own sole profit. So that the usufruct of the community's technological knowledge has come to vest in the owners of such material wealth as is held in sufficiently large blocks for the purpose."⁴

A qualified exception might be taken to Professor Veblen's allocation of power. Some groups of industrial wage earners appear to be moving steadily toward a control over industry and over technology which is comparable to that exercised by capitalists; the wage earner's status in highly organized trades promises to become a vested interest in a field as wide as that occupied by intrenched proprietorship. But debate of this point would be irrelevant to the present study. We agree without reservation to the proposition that the interests which control the material means of production—be they those

⁴⁴ Veblen, Thorstein, *loc. cit.*, pages 58, 59.

of capitalists or of laborers or both—also hold dominion over technological conditions. The advance of these conditions is encouraged or is permitted only when such advance is in accord with the private interests of those who control industry. The social interest in production, broadly conceived, is served best by steady and unimpeded technological improvement. We are interested here in the extent to which these two sets of interests are in opposition to each other and the effects on this opposition of contemporary trends and tendencies within industrial establishments. Our tentatively advanced conclusion is that these trends and tendencies are reducing whatever opposition may formerly have existed between the two.

Modern technology grows by accretion and at conjunctures of industry and science. It would be difficult, if not impossible, to name a single industrial contrivance, formula, or product of the present day which has not been evolved from something else. The industrial revolution, genetically considered, had its legitimate occurrence at unknown times and places when unknown inventors created a wheel and a lever. The respective influences on technology of geniuses and of cultural circumstances is a problem which thus far has defied solution. It is obvious, however, that cultural determinants set the problems and supply the instruments and methods for the geniuses.⁴⁵ And it seems equally clear that in spite of the absence of acquisitive motives from much of the work of such (exceedingly few) persons as Thomas A. Edison and Charles P. Steinmetz, most technological advance is inspired by the pecuniary ends of those who control industry.

The present enormous number of research projects in

⁴⁵ See Epstein, Ralph C., "Industrial Invention: Heroic or Systematic?" *Quarterly Journal of Economics*, Vol. XL, No. 2, Feb., 1926, and Ogburn, W. F. and Thomas, Dorothy, "Are Inventions Inevitable?" *Political Science Quarterly*, March, 1922.

such, immediately, non-commercial places as physical and chemical laboratories is induced by what are vaguely called "social needs"—but which are more directly the needs of industry.⁴⁶ And the "application" of this pure science to productive ends is being furthered, at a constantly accelerated rate, by industrial enterprises themselves. Thus in the past twelve years individual industrial establishments in the United States have increased their research laboratories from fewer than one hundred to more than five hundred. At the present time 30,000 persons are engaged in applied science investigations, the annual costs of which reach the formerly unheard-of total of \$200,000,000.⁴⁷ These technicians are working, and this money is being spent, not in the hope of making random "discoveries" or "inventions"; the purpose is rather to solve problems which have been definitely formulated. The conception and creation of technological innovations, as they occur within an industrial enterprise, are typified by the following illustration:

The idea that a certain operation or process ought to be accomplished by machine . . . may originate either in the factory itself, or be conceived by a member of the merchandising committee or by some executive in the general office. Its desirability being passed upon by several department heads, a member of the mechanical division (or sometimes the person who made the suggestion, if he is possessed of a mechanical training) is then requested to prepare a rough sketch for the device. This drawing is then passed over the desks of several members of the mechanical division, each a specialist, to receive critical estimates as to the contemplated machine's feasibility of construction, the materials to be employed, the practicability and proper mechanical functioning of the machine after it is

⁴⁶ Cf. Whitney, Willis R., "Stimulation of Research in Pure Science Resulting from Needs of Engineers and of Industry," *Mechanical Engineering*, Vol. 49, No. 2, Feb., 1927.

⁴⁷ Hoover, Herbert, "The Nation and Science," *Mechanical Engineering*, Vol. 49, No. 2, Feb., 1927.

made, its probable cost of operation, and its prospective performance in terms of physical units of product. If the proposal survives these several analyses, specifications are decided upon and preliminary drawings made. An estimate is then made of the cost of construction, and after this has been approved, detailed specifications are drawn for each part of the machine. It is then built and placed in the factory's experimental room to be tested under actual production conditions. All necessary adjustments are made here, and these may require as long as from several weeks to six months or more. When they have been accomplished successfully, the machine is regarded as perfected for use and is put into service in the department for which it was designed.⁴⁸

The above description of the common procedure used in working out new productive methods is interesting because it relates how such changes generally are made. Even more striking, because of the quality of concreteness which they possess, are actual technological improvements made under various operating conditions. The Ford Motor Company has been one of the most conspicuous innovators among American manufacturing concerns. Mr. Henry Ford, in a chapter entitled "Learning by Necessity," states a few facts and tells what they mean in comprehensible dollars-and-cents terms.

. . . In the engineering laboratory at Dearborn we are now equipped to do almost anything that we care to do in the way of experiment, but our method is essentially the Edison method of trial and error.

As it is, our task is rather a large one, for we must look well ahead to the possible depletion of sources, to the saving of material, and to the finding of substitute materials and fuels. Quite often, we merely put the results of our experiments away for future use in case market conditions should change. For instance, if gasoline should go above a certain price, then it would be practical to bring in substitute fuels. . . . Curiously

⁴⁸ Epstein, Ralph C., *loc. cit.*, page 256.

enough, some of our largest savings come in the manufacture of parts where we thought we were doing rather well.

In one case we found that by using two cents more worth of material in a certain small part we were able to reduce the total cost of it by 40 per cent. That is, the amount of material under the new method cost about two cents per part more than under the old, but the labor was so much faster that, under the new method, the cost which was formerly \$.2852 was now only \$.1663—we carry our costs out to four decimals. The new method required ten additional machines, but the saving was nearly twelve cents per part—that is, the cost was almost cut in two—which, on a 10,000 a day production, meant a saving of \$1,200 a day.

From the beginning of manufacturing until several years ago we had used wood for the steering wheels. This seemed a great waste, for only the best quality of wood could be used and no wood-working operation can be carried through with absolute precision. At the same time, out on the farm at Dearborn, we had tons of straw yearly going to waste or being sold for next to nothing. Out of this straw we developed a substance which we call Fordite, which looks like hard rubber but is not. The steering wheel rim, and, in all, about forty-five parts of the car, mostly having to do with the electrical work, are now made out of this straw, and the production is so large that the farm will produce only enough for about nine months. Then we have to buy straw. . . .

We save about half the cost of wood—and we conserve wood.

The touring car uses about fifteen yards of artificial leather for the top, curtains, and upholstery, and we need altogether five grades. Using natural leather would be quite out of the question. In the first place, it would be too expensive, while, in the second place, not enough animals are slaughtered to begin to provide for our requirements. Our people had a hard time developing an entirely satisfactory artificial leather—it took them five or six years. First they had to get the proper coating compound for the cloth, which is the base of the leather, and then to make the operation continuous. Making our own leather not only renders us independent—which was

the original purpose of the undertaking—but also saves us more than twelve thousand dollars a day. . . .

The treating of steel by heat is of the highest possible importance, for it makes possible the use of lighter parts by increasing their strength. But it is a delicate process; a part must not be too soft or it will wear out, or again, if it is too hard, it will break. The exact state of hardness depends upon the use to which the part is to be put. This is elementary. But the treating of large quantities of parts so that each will be of the right hardness is far from elementary.

The old way was to guess. We cannot afford to guess. We cannot afford to leave any process to human judgment. In our former heat treat processes, we thought that we were fairly advanced. And we were advanced for the time, because the work could be done by men after only a little training and the results were uniform, owing to the mechanical regulation. But the heat treat departments involved hot, hard labor, and we do not like to have jobs of that sort in the shops. . . . And also the straight parts, such as axles, did not cool evenly, and after treatment they had to be straightened, which added to the cost.

We set a young man the task of bettering all our heat treat operations. He felt his way for a year or two and then began to get results. He not only cut down the number of men, but he devised a centrifugal hardening machine, which cools the shafts evenly all around. Thus, they do not bend, and the straightening operation is no more. The electric furnace replacing the gas furnace has been one of the large steps forward. Where four gas-fired furnaces, with six men and a foreman, did 1,000 connecting rods an hour for the drawing operation alone, now two electric furnaces will both harden and draw 1,300 rods an hour, with only two men—one to feed and the other to take off. . . .

These changes may not seem important, but cutting out the item of straightening after the heat treat has saved us around thirty-six million dollars in four years! ⁴⁰

⁴⁰ Ford, Henry, in collaboration with Samuel Crowther, *To-day and To-morrow* (Doubleday, Page, 1926), pages 62-67. Anyone interested in the operation of modern industry will learn many significant facts from reading this entire book.

It is a matter of general knowledge that the number of technological innovations is steadily increasing and that the velocity of this increase also is becoming greater.⁵⁰ This cumulative momentum is due to the fact that advance in the industrial arts is by accretion. Innovations tend toward greater complexity which, in turn, makes for added innovations. All of the changes which are made aim at a lowering of costs in relation to the quality of output, or at increased production, or both. The following illustrations have been offered by the Secretary of the Division of Engineering and Industrial Research of the National Research Council to show how advancing technology reduces costs of production and increases output:

In 1883 the amount of aluminum recovered in metallic form in this country was 1,000 ounces, valued at \$875. In 1923, forty years later, the output was ninety million pounds, valued at \$28,000,000. The growth of the aluminum industry has been based directly upon research in chemistry and electricity. . . .

As a result of research, messages may be transmitted over the new cable between New York and the Azores at five times the speed possible in the old type of cable with the same size copper conductor. From a theoretical study it was known that the ideal way to increase the capacity would be to wrap a magnetic material around the wire. An investigation was started to find a material which would meet the requirements, and this investigation resulted in the discovery of an entirely new magnetic material to which the name "permalloy" was given. It is an alloy of nickel and iron which, when properly treated by heat, possesses remarkable magnetic properties. By wrapping a tape of this material around the conductor of a submarine cable, the problem of loading the conductor was solved, and it was possible to do with the one cable what it took five cables to accomplish before. . . .

⁵⁰ This is particularly evident in the case of patented articles. The monthly average of patents issued increased from 3,073 in 1919 to 3,795 in 1925.

Recent investigations in the glass industry have resulted in fundamental changes which have revolutionized the glass-container business. The outcome has been a change in the design of some plants which has made one trade, that of bottle-glass blowing, practically obsolete and which has increased production to a point where some machines are fabricating as many as three hundred bottles per minute. A study of glass-flow has resulted in the development of feeders and machines which have increased production several hundred per cent. Studies of quartz-glass are being made which will undoubtedly result in still further changes in the evolution of the glass industry. Glasses are being developed that will resist thermal shock, high temperatures and also physical abuse.⁶¹

Innovations along technological lines often come in response to a special industrial condition rather than as a means of opening up and realizing entirely new possibilities. Just recently, for example, it has been noted that the labor costs of handling and conveying materials are excessive—due largely perhaps to the restriction of immigration and the consequent shortage of unskilled labor. A recent investigation disclosed that more than three billion dollars, or approximately 22% of all factory labor costs in the United States, is paid out annually for the manual handling of materials.⁶² It is estimated also that possible readjustments within plants would reduce this payroll by more than one billion dollars.⁶³ In so far

⁶¹ Spraragen, Wm., "What Research Means to Industry in Practical Gains," *Factory*, February, 1927. Although the examples given here are outstanding, they are not unique. An interesting presentation of one hundred cases of improvement in manufacturing operation, all of which resulted in enhanced quality, lowered costs, larger production, or a combination of these results, is the article by L. P. Alford entitled "Amazing Advances in Productive Efficiency," *Manufacturing Industries*, Vol. XII, No. 3, Sept., 1926.

⁶² An engineering survey made under the auspices of *Factory*. Findings and notations of improved methods in use published in *Factory*, Vol. XXXVII, No. 2, August, 1926.

⁶³ Address of Harold V. Coes before the Materials Handling Division of the American Society of Mechanical Engineers, Dec. 8, 1926. *The New York Times*, Dec. 9, 1926.

as labor displacement would result, a supply of workers would be made available for other phases of industry or for new industries. Such readjustments are being actively furthered through the creation of a wide variety of mechanical handling and conveying devices.⁵⁴ Numerous users of such equipment testify to its effectiveness in reducing costs and increasing output.⁵⁵

The fact that industrial establishments themselves are taking a constantly more active part in the advance of technology and the further fact that such advances as are made contribute to society's welfare in the form of larger production are important to this study. An equally significant consideration, however, is whether, under the domination of technology by those who control industry, society gets the largest possible benefit from improvements in the industrial arts. Is it to the individual interests of the controllers of industry to employ the scientific methods of production which, from the point of view of society, are most desirable? In essaying an answer to this question allowance must be made for the inertia which normally causes people, under all circumstances and in regard to all interests, to prefer the security of the old ideas and methods to the risks of the new. It also must be remembered that many of the "innovations" which fail to be adopted by industry are merely new ways of doing things which already are done more effectively by old methods.

The divergence between the interests in technological

⁵⁴ The remarkable number and variety of these ingenious contrivances is strikingly evidenced by citations in *Industrial Management*, Vol. LXXII, No. 6, Dec., 1926. Descriptions are given of approximately one hundred recently devised types of materials handling equipment.

⁵⁵ See, for example, *Manufacturing Industries*, Vol. XIII, No. 2, Feb., 1927. The article by Roy D. Chapin, "Large Manufacturing Savings from Improved Material Handling," is an account of what has been accomplished by the Hudson Motor Car Co. The experience of the Westinghouse Electric Co. is related by E. L. Spray, "Better Methods Cut Handling Costs Fifty Per Cent."

advance of those who control industry and of society at large is being steadily reduced. Technological motivation grows cumulatively. As the concatenation of industrial processes becomes more elaborate, the prospect of gain to the controllers of industry by technological improvement is enhanced. Just as a chain is only as strong as its weakest link, so an entire series of productive processes is limited by its least effective individual process. It is in strengthening the weak spots in the series that accretions to technology occur. It follows also that the cost of making the change becomes less of a barrier as the interdependence of processes becomes greater.⁵⁶ This condition is intensified by the larger investment of capital which accompanies the greater elaboration of industrial processes.

The improvement of railroad rolling-stock—while not occurring within the field of manufacturing industry—is an illustration of how this consideration applies. The invention of the flanged wheel, the non-rigid truck, the tubular boiler, and the automatic air brake all contributed greatly to the general end of hauling heavier trains at a lower cost per ton-mile. After these improvements had been made the railroads sought further economies by building faster and more powerful locomotives. After this increased weight and greater speed had reached the limit set by the ability of the roadbeds to bear the strain, it appeared that only by laying still heavier rails and using more ballast could further advance be made. But now it is announced that the Chicago, Milwaukee, and St. Paul Railway is equipping its passenger coaches with roller-bearing wheels. Many experiments, including a six-hundred-thousand-mile test, have proved the technical possibilities of this device. The power required to

⁵⁶ The detailed aspects of cost considerations, as they apply to technological change, will be discussed in Chapter VII.

start a train equipped with these bearings is only one-seventh of that needed to start a train without such equipment. An ordinary Pacific type passenger locomotive can handle a twenty-one-car train mounted on roller bearings as easily as a twelve-car train with the old friction bearings.⁵⁷ Each one of these innovations—flanged wheels, trucks, boilers, brakes, and bearings—was highly specialized in that it applied directly to only a small part of a train or of a railroad's total equipment. Yet the result of each is heavier trains, lower ton-mile costs, and a more effective use of the railroad's facilities. It is clear also that, had it been necessary, the railroad would have been justified in spending an enormous sum of money to secure the benefit of any one of these improvements. The complexity of the organization of a great railroad system, and the enormous capital investment in it, cause the amount which it might afford to spend for such technological advances to be much larger than would be the case if railroads were only short local lines. These conclusions concerning railroads have equal pertinence to manufacturing industries.

It often has been pointed out that the controllers of industry retard the advance of the industrial arts along mechanical lines because of their unwillingness to abandon serviceable equipment already in use in order to install new and better devices. This unwillingness tends to diminish, however, under the conditions described above. Then too, it is constantly becoming more difficult to "hide" a useful innovation. Since technological advance is by accretion, and since so many laboratories and experiment rooms are working on similar problems, the pressure of actual or potential competition is steadily causing more discoveries and inventions of this kind to be put into actual use. This situation is intensified by

⁵⁷ *The New York Times*, March 13, 1927.

the fact that wider publicity is constantly being given to scientific developments through the various associations and the numerous technical and trade journals. The simultaneous application for patents on identical or similar articles by different persons is evidence of this tendency. This condition might be made more effective if our patent laws provided for forfeiture of patent rights in cases of nonuser.

As a matter of fact, the abandonment of old equipment and methods in favor of new is a constant process in manufacturing industries. Sometimes such a replacement results in a relegation to the scrap heap of the machinery or appliance which has been replaced. At other times—and this condition appears to be a fairly common one—the old equipment is retained and is used on those occasions when the output of goods by the new and improved equipment is not large enough to supply a temporarily stimulated market. The steel industry furnishes a number of illustrations of how this residue of what may be called “secondary capacity” is created and used. The process of refining steel from iron is a case in point. In 1854 Henry Bessemer, by the invention of his pneumatic converter, made possible the high-speed and low-cost production of steel which we know to-day. In 1861 Siemens developed his regenerative furnace which possessed the merit of being adapted to refining ores higher in phosphorous content than could be treated by the Bessemer process. Yet, as long as there were adequate supplies of ores low in phosphorous content, the basic Bessemer process continued to be used in most steel mills. As the supply of choicer ores became depleted, the regenerative furnace of Siemens was further developed until it became what is known to-day as the Siemens-Martin open-hearth process. In addition to being able to refine iron of a higher phosphorous con-

tent, this process made possible a better control of temperature, a larger tonnage of output from a single furnace, the use of a wider variety of materials, and a greater range of products than is possible when the Bessemer process is used. The open-hearth process gradually came into wider use until, in 1908, the production by this method exceeded that by the Bessemer. To-day the tonnage produced by the open-hearth process is approximately five times as great as that turned out by the Bessemer.⁵⁵ This does not mean that all of the replaced Bessemer converters have been destroyed or scrapped. It means, instead, that many of them are allowed to remain idle most of the time. They constitute a reserve—a secondary capacity—which may be used when the market will warrant their operation.

Another illustration of this condition is afforded by the steel industry in the case of coke manufacture. The importance of coke to the making of steel is indicated by the fact that more than forty million tons of this fuel were consumed in American blast furnaces in 1923. The old method of making coke was by the use of what is known as the beehive coke oven. In this process it is not possible to recover the coal gases. More modern types of coke ovens not only produce a better grade of coke, but also recover a number of valuable by-products from the gas and even capture the gas itself for use as fuel for the coke ovens and other furnaces in the steel mill. After a careful engineering survey of all the methods in use, the United States Steel Corporation, in 1906, adopted the Koppers cross regenerative coke oven for use in its plants. The installation of these ovens has brought about a saving of \$8,000,000 a year to the Steel

⁵⁵ Dates and estimates in this paragraph are taken from Walker, J. Bernard, *The Story of Steel* (Harper and Brothers, 1926). See this book (pages 41-61) for descriptions of the basic processes used in making steel.

Corporation and it is probable that an equal amount is being saved by other American companies which have replaced their beehives with Koppers or other types of by-product coke ovens.⁵⁹ Yet the beehive ovens, replaced though they are by better processes, have not ceased to exist. They, like the superseded Bessemer converters, are retained for occasional use and constitute a secondary capacity. The circumstances under which one plant uses beehive ovens were described in the preceding chapter.⁶⁰

Many references have been made of late to the "surplus capacity" or "capacity in excess of normal needs" which exists in American industrial plants. Unquestionably the report of the Hoover Committee has demonstrated that our factories are capable of turning out more goods than they actually do. In the present chapter we have sought to show the bearing of that demonstration on our study. Yet many of these observations of "supernormal" capacity appear to apply to cases analogous to the Bessemer converter and the beehive oven. It seems probable that the name "surplus capacity" often has been applied to what we call here "secondary capacity." It is a sad abuse of terms. Such capacity is in no sense "surplus." It was not created for use in emergencies but rather to meet the ordinary needs of production. It is composed of equipment which has become obsolete or semi-obsolete but which may become useful in times when output must be increased. It is simply a by-product or residue which is created by technological improvement.

Our discussion thus far has related more directly to the consequences of unfolding technology to industrial processes and to the quantity of output than to the

⁵⁹ See Walker, J. Bernard, *loc. cit.*, page 65.

⁶⁰ See quotation from Clark, J. M., *Economics of Overhead Costs*, page 106, above.

qualities of the goods produced. The abstract qualities of goods cannot be measured in units as can the physical volume of production. Hence precise comparisons are difficult, if not impossible. It often is said that modern technology is designed to create more goods rather than better goods. The specific argument behind such generalizations usually consists of attempts to compare things which are altogether incomparable. It is as futile to urge the special merits of the old masters against the far-flung products of the rotogravure presses as it is to argue the respective and relative merits of William Shakespeare and Henry Ford. To measure the effects of technological advance on the qualities of goods, comparisons must be made between similar products. This can be done best in the case of those commodities to which objective standards and specifications are applicable. Such measurements can be applied only to utilitarian qualities in goods. Thus most dietitians and many laymen agree that the average baker's product of to-day is vastly superior to the average bread that "mother used to make." This improvement is due largely to experiments and baking tests which are conducted by flour mills. The science of mechanical engineering is responsible for the refinements and betterments—apparent to the most naïve observer—which are possessed by the latest model of automobile or sewing machine as compared to those of ten or twenty years ago. The difference is especially marked if one considers the quality in relation to the price. It remains true (at least, to an antiquarian) that many of the old hand-woven textiles are more artistic than those made by machine, and that furniture from the shops of Chippendale, Hepplewhite, and Duncan Phyfe assays higher in beauty than do the products of the Grand Rapids factories. Yet, in the field of

the æsthetic, there are many champions of such machine contrivances as dynamos and automobiles who declare these articles to be distinctly beautiful. And it well may be that connoisseurs of future centuries will set as much store by such quaint devices as vacuum sweepers and kitchen sinks as collectors of to-day do by spinning wheels and pewter mugs.

As a matter of fact the degree of quality in goods produced does not come into direct conflict with the interests of those who control industry so far as internal efficiency or the state of the industrial arts is concerned. In accordance with the individual and acquisitive interests of those who control industry, the kind of goods and services offered to customers are those which promise to yield the largest net return to the producers. The choice of quality is immediately and directly within the jurisdiction of purchasers. It is unfortunately true that customers' choices—particularly those of so-called "final consumers"—often are biased by claims and arguments advanced by sellers instead of resulting from the consideration of facts.⁶¹ It is interesting to observe, however, that the very advance of technology makes it possible for buyers to select on the basis of specifications and standards. This opportunity, while beyond the reach of unorganized consumers, is taken advantage of by a constantly increasing number of industrial buyers. An example is afforded by the case of steel castings. For a long time the technologists in the steel industry were concerned chiefly with lowering production costs rather than with improving quality. The purchasers of steel castings began to use elaborate specifications in making their orders and to buy on a quality basis instead of invariably giving

⁶¹ Cf. Chase, Stuart, and Schlink, F. J., *Your Money's Worth* (Macmillan, 1927).

orders to the lowest bidders. As a result of this condition five independent manufacturers formed the Electric Steel Founders' Research Group in 1920."² The purpose of this organization is to devise methods for improving the quality of steel castings.

It is difficult to describe the developments which are affecting the internal arrangements, techniques, and policies of modern manufacturing enterprises so as to throw the composite trend of all of them into clear and unquestionable relief. There are numerous mutually opposed and conflicting tendencies within the complex arrangements of manufacturing industries. An attempt has been made in this chapter to indicate the more important general phases of this conflict. It has not been possible to enumerate all of them. The evidences given appear, however, to substantiate the claim that the economic interests of individuals and of society are not harmonious. The conflicts and the modifications of conflicts which have been described are traceable, in each instance, to the pecuniary interests of certain participants in manufacturing industry. The developments which have occurred have been generated by desires to make money. Our only conclusion concerning them is that the trend of practices within manufacturing enterprises is pushing back the "frontier of conflict" between making goods and making money. That is to say, the point at which the conflict occurs is higher on the scale of productive output than it has been in times past.

This is not, in any sense, a final conclusion in regard to the problem we are studying. It has no bearing beyond the "internal productive efficiency" of manufacturing enterprises. There are other important determiners of

²² The Engineering Foundation, *Popular Research Narratives*, Vol. II, pages 68-71. These little books contain much non-technical information concerning the conditions and nature of inventions, discoveries, and industrial techniques.

whether, as time goes on, it is becoming more (or less) necessary to make goods in order to make money. One set of determiners is the external relationships of manufacturing enterprises. Another is made up of the trends of costs and prices. These will be considered in the two chapters immediately following.

CHAPTER VI

EXTERNAL RELATIONSHIPS OF MANUFACTURING ENTERPRISES

IN the two preceding chapters we have attempted to trace, in broad outline, the forces and processes shaping the development of modern manufacturing enterprises. Our chief consideration has been the physical characteristics of such enterprises, their size, their tendencies to combine with each other, their internal arrangements or productive anatomy. Through examining the trends manifested in these several characteristics we have sought to find out whether, as time goes on, it is becoming more or less necessary to make goods in order to make money. As regards the specifically physical trends and their pecuniary derivatives, the tentative conclusion reached was that the "frontier of conflict" between making goods and making money is being pushed back.

The importance of these physical characteristics of a manufacturing enterprise is due to the fact that they characterize it as a "going concern." A going concern is a product of its physical make-up and of the business environment in which it operates. Mechanistically it is analogous to an adult human being who is, we say, made what he is by both biological and cultural determiners. And, like a human being, a going concern both affects, and is affected by, its surroundings. Thus one important set of conditions concerning both the making of money and the making of goods by manufacturing enterprises are those which exist outside the enterprises themselves.

We must, therefore, briefly examine the environment in which going manufacturing concerns operate and seek therein the forces and processes which are, as time goes on, making it more or less necessary to make goods in order to make money.

To discover clear-cut and definitive trends in the field of social relationships is no easy matter. Unlike physical or pecuniary magnitudes, they are not susceptible to measurement. And it is obvious that every manufacturing enterprise is the center of such a host of influences, economic, political, and broadly social, that it would be a virtual impossibility even to identify all of them. For these reasons no attempt will be made in this chapter to take account of every relationship existing between manufacturing enterprises and persons and organizations outside themselves. We shall examine instead broad classes of relationships of a purely business nature. For the present purpose these may be regarded as consisting of three types: first, relationships between manufacturing enterprises which operate on the same industrial level; second, relationships between manufacturing enterprises and industrial or commercial agencies which operate on different industrial levels; third, relationships between manufacturing enterprises and financial institutions. As we study these broad classes of relationships we shall seek, principally by inference from rather general evidence, to delineate their trends and the productive and pecuniary consequences of the trends.

Enterprises on the Same Industrial Level

The caption above is a phrase which purposes to identify the essential condition of certain relationships obtaining between manufacturing concerns. The condition is that all of the participants in a given relationship have at least one common industrial characteristic

which serves as the basis for the relationship. Thus if concerns which buy steam coal, or engage in foreign trade, or make ladies' hats, have dealings with each other in regard, respectively, to buying steam coal, or carrying on foreign trade, or making ladies' hats, these dealings properly constitute relationships between enterprises on the same industrial level.

Relationships of this type arise from the existence of problems, or interests, or dangers, or opportunities, which are common to each participant. The participants, through the arrangement entered into, adopt some mutual and reciprocal policy, or method, or attitude, in regard to this matter of common concern. These participants are actual or potential competitors of each other (as in the buying of steam coal, the conduct of foreign trade, or the making of ladies' hats in the illustration above). And, in so far as the conduct of their business comes to be regulated by these relationships, the scope of competition is restricted. Competition, in its most extreme conceivable form, becomes anarchy. Relationships of the kind we are discussing here, for the reason that they give certainty and definiteness to the policies and practices of the participants, restrict competition.

So important have these relationships been to their participants that there have existed, in many times and places, associations of competitors which served as central agencies for fostering, and furthering, and supervising the relationships involved. The best known of the historic associations of this type probably are the Hanseatic League and the merchant and craft guilds which flourished in medieval Europe. Each of these was a specialized agency for carrying out certain functions. The functions were determined by the mutual interests of the members of the association; e.g., the Hanseatic League, among other things, established trading stations

and waged war against robbers and pirates; the guilds adopted rules concerning the making of goods, marketing practices, apprenticeship, and saw to it that traditional "fair" prices were maintained. Many and diverse relationships tend to cluster about associations such as these. For this reason the best way to examine the relationships obtaining between enterprises on the same industrial level, and to determine their pecuniary and productive consequences, is through studying the functions and practices of the associations which are charged with administering the relationships.

The less romantic modern trade association is the functional prototype of the Hanseatic League and the medieval guild. Its functions are, of course, not identical with those of the earlier organizations. Yet they serve exactly the same purpose in that they are devoted to the mutual interests of the members of the association. A trade association has been defined by the American Trade Association Executives as "an organization of producers or distributors of a commodity or service upon a mutual basis for the purpose of promoting the business of its branch of industry or commerce and improving its service to the public."¹ The aim to "promote the business" of its members probably is a more immediate one than that to "improve its service to the public." The former concerns making money; the latter concerns making goods. The latter aim, if it exists at all, must be a derivative of the former one. Whether it does exist or not is precisely what we wish to learn. Trade associations are created to help their members make money. Do they also contribute to the end of making goods?

It is not possible to give in this chapter a complete account of the activities of trade associations or of the

¹ U. S. Bureau of Foreign and Domestic Commerce, *Trade Association Activities* (Government Printing Office, 1923), page 1.

multitude of relationships which cluster about these associations. We shall, however, present in outline form a list of functions which are typical of trade associations in manufacturing industries. Secretary Hoover has supplied us with a useful nucleus of such a list, with brief descriptions of the content of each broad class of functions:

1. *Statistics.* Most trade associations have evidenced active interest at some time or other in the collection, compilation, preparation, and dissemination of statistical material relative to their industries or trades. They have been considered with particular emphasis as to production, stocks, shipments, or cancellations. Sometimes the greatest desire has been for data regarding prices and orders. Statistical activity by trade associations has legal limitations. However, there is no question but that the curves in the business cycle from activity to depression have been less disastrous in those industries or trades where accurate, lawful statistical data have been available to all. Fundamentally it is impossible for business men to form those vital judgments as to their future course of action in the wise and safe direction of their activities unless they are informed as to the changing current of production and consumption, not only in their own lines but also in other lines of business, which indicate broader currents of economic life. The only criteria are statistics, and if industry is to march with reasonable profits instead of undergoing fits of famine and feast, if employment is to be held constant and not subjected to vast waves of hardship, there must be adequate statistical service. Whether these services are to be maintained by the Government or by trade associations, they must be maintained if we are to have an orderly economic life. To the trade associations are due the vast majority of our statistical services, and if they be conducted alike for the benefit of the producer and consumer they are constructive.

2. *Legislative Activities.* The interest of any one industry or trade, to be sound in the ultimate analysis, must be the

public interest. In their legislative activities many trade associations have borne this axiom foremost. Greater uniformity as to State laws affecting the public and industry and commerce may be brought about and the views of a trade as a whole can be properly laid before legislative bodies only through association. The demand of legislatures for the views of the different trades upon all sorts of questions of public interest is incessant, and the open preparation and presentation of such matters is far more consonant with proper development of public life than the private lobbying of the few or powerful.

3. *Simplification and Standardization.* Waste in industry is acknowledged. Its elimination in a vast area of problems can only be accomplished by collective action in a trade. The simplification of dimensions in articles and parts, the establishment of definite grades and qualities, not only reduce the cost of production and the volume of goods required in distribution but they also increase the actual basis of competition. Hundreds of millions of dollars have been saved through the adoption of principles laid down in such programs, not alone to the business groups concerned but to the ultimate consumer. They have brought about lower prices, through attacking directly the costs of raw material, inefficient plant operation, and unnecessary stock maintenance. The very large movement in this direction is to-day the most promising field for reducing the margins between the producer and consumer, but no progress can be made without collective action.³

4. *Cost Accounting.* Goods must be sold at a profit or industry and commerce will not survive. Truly remarkable

³ The movement toward simplification and standardization by trade associations has been facilitated by the Division of Simplified Practice of the Bureau of Standards, established in 1921. *The Commerce Yearbook, 1926*, pages 33-37, presents a summary of what has been accomplished by simplified practice agreements. The total effects of these accomplishments are impossible of measurement. Yet "a total estimated annual saving of over \$300,000,000 has resulted through the adoption of simplified practice recommendations for paving brick, sheet steel, reinforcing bars, warehouse forms, range boilers, invoice forms, and lumber." (Page 37.) (Note by the present writer.)

were the findings of Government agencies in the war years regarding the knowledge and understanding of costs in production and distribution. Losses often were confused with profits, all for the lack of knowledge of the fundamentals of cost accounting. So to-day the trade association is proving itself the most potent organized influence in the study of costs in industry and trade. Standard costs systems applicable to the peculiar conditions are being developed within each business group. All tend to more scientific knowledge of business and ultimately lowered costs.

5. *Credit and Collection Activities.* Credit is the vehicle of trade. Without mutual confidence buyer and seller cannot transact business. Misdirected credit must be corrected through proper and legal collection procedure. With its particular broad-visioned and unbiased perspective of the business transactions of its own group, the trade association becomes a peculiarly well-fitted agency in these service functions of business conduct. The basis is one of mutual service and return. The trade association becomes a trusted and reliable clearing house for the industry's vital credit and collection information. While it is true that credit information has been used for restraint of trade, this is not its primary or usual purpose and obviously should be prohibited.

6. *Trade Disputes and Ethics.* Business has always entailed the strife of competition. . . . However, there are rules and principles of fair play that must be regarded in trade relations, and in the development, establishment, and maintenance of these rules the trade association has come to be a potent factor. Take commercial arbitration, standard contract forms and trading rules, trade terminology and nomenclature—each is a direct step toward saner business practice. The stamping out of unfair competition and misrepresentation and the adoption of fair practice principles—codes of ethics—have been real accomplishments of scores of trade associations in the direction of better business.

7. *Employee Relations.* Perhaps the individual business concern or manager has taken more frequently and at earlier periods the initiative in forward policies of employee relations.

Nevertheless, trade association after trade association is now developing the necessary preliminary stages of more equitable and advanced phases of employee relations. In most cases it is largely a matter of research into the tremendous problems involved—selection of personnel, education, welfare work, accident prevention, employment principles, and collective agreements. The associations will recognize that in the years of devotion to improving the processes of production and distribution there has been great oversight of the human factor and its mass relation. Shall it be approached blindly and without preparation and knowledge? Not if the present-day indications of trade association activity have real meaning.

8. *Insurance.* Considering the vast sums expended in insurance against risk and loss, it is no more than logical that trade association activity has taken root in this important field. This has not grown, however, so much from a competitive business point of view, but rather as a matter of education and analysis. Items of costs of doing business must be understood, adjusted, and cut to the lowest point commensurate with efficiency and satisfactory accomplishment. Strange to say, there has been little uniformity in State legislation affecting insurance. Here in particular the trade association has been instrumental in the reasoned elimination of waste and unnecessary expense.

9. *Traffic and Transportation.* Business cannot be consummated until goods readily find their way to market. The way must be direct and unobstructed. It must be efficient in its operation and economical. To insure all this the individual cannot work single-handed. His interest must be pooled with those of others, and the united group then operates for the efficient transportation of the world's commodities. The trade association traffic bureau thus has many, many problems in constant retrospect before it. There are rate matters, classification, car supply, auditing of transportation bills, the study of competitive transportation agencies, and the real force of such competition. The trade association speaks as the voice of industry in transportation problems.

10. *Commercial Research.* "Why does distribution cost so

much?" the business executive is asked. And this is the very question commercial research is pounding away at to-day in so many trade organizations. Waste must be run down and eliminated. The consumer's requirements must be ascertained, acknowledged, and served with economy. All this is recognized by the trade association, and whether it be domestic or foreign distribution—purchase or sale—it must be carried on with complete knowledge and real efficiency. Goods do not find the market with readiness and ease. They must be adjusted to demand—an exacting, much sought-after, and not too well-defined market. Especially does this apply to export markets. Commercial research by trade associations is proving a real force in this great problem.

11. *Industrial Research.* Manufacturing processes improve with understanding gained through actual operation. Industrial research is the study of such operation. The trade association functions with remarkable success in the promotion of scientific industrial research. More and more is the value of scientific research coming to be appreciated, but in many industries there is little hope of exhaustive research by the establishment of moderate-sized units. Therefore, in many trades, laboratories are being supported jointly and are making large contributions to reduction of costs in raw materials and processes and in the better adaptation of products to consumers' needs. Industrial research, though not applicable to all industrial groups, will bring gigantic financial return to industry as a whole in its more general application through trade-association activity.

12. *Government Relations.* Whether the attitude of business be to "keep Government out of business" or to the contrary, it nevertheless is true that the Government in its manifold activities directly impinges upon commerce and industry at many points. The control of public utilities, the restraint-of-trade acts, the large volume of Government expenditures, all materially affect business, not to mention the legislative problems thrust upon the Government as the result of after-war reorganization. Official trade information, official industrial statistics, official standards, procedure, and practice are

being sought by the trades, and the Government is constructively active in coöperation with business to develop these fundamental services.³

To the above list as compiled by Secretary Hoover should be added certain other classes of functions, as follows:

13. *Interchange of Patent Rights.* In addition to coöperative experimental and technological work carried on by an association itself, it sometimes acts as intermediary for its members in regard to reciprocal agreements concerning the pooling and mutual use of patents. Such use may or may not entail the payment of royalties to the members owning the patents. Thus a number of companies engaged in manufacturing petroleum products grant each other mutual rights to use the cracking processes, and special features and modifications of these processes, which are, each of them, controlled by patents owned by one or another of the companies. The National Automobile Chamber of Commerce maintains another important cross-licensing plan which grew out of the long litigation involving the Selden patents. The agreement between the participants in the plan requires each of them to grant licenses to each other member (without royalty charge) covering all patents held or acquired. Design patents and basic or "radical" patents are exempted from the pool. It is stated that the patents covered by this agreement now exceed 1,000 in number and have been contributed by almost 125 subscribers to the plan.⁴ Attempts by trade associations to control prices through the exploitation of a pool of patents have

³ Bureau of Foreign and Domestic Commerce, *loc. cit.*, pages 3-7 of the Introduction by Herbert Hoover. See this volume for a complete description of the functions outlined by the above list.

⁴ For a complete description of this plan, and a discussion of these practices, see National Industrial Conference Board, *Trade Associations* (1926), pages 127-148.

been declared by courts to be in violation of law.⁵ If the restrictive influences of monopoly may be prevented in cases such as these, it appears that such pooling of patents leads to technological improvements which would not otherwise occur and thus to the production of more goods and better goods. A patent right is a legal monopoly. The more diffused the monopoly power, the greater tend to be the productive benefits and the less the restrictive feature of monopoly.

14. *Joint Negotiation of Purchases.* Some associations of manufacturers have engaged in buying activities as agents for their respective members. This practice has enabled the members to obtain the advantage of large-scale purchasing of materials or equipment through coöperation with each other. The association also is able to study the market for material and equipment used by its members in a more thorough and scientific fashion than would be possible to many of the members themselves. This function of trade associations is thus one which confers special benefits on small buyers. The lower prices and the greater certainty of supply which are secured in this manner are favorable to production. It is only when a joint purchasing arrangement expands to the scale of a buyer's monopoly that there is any threat to the public welfare. And there appears to be little danger of this latter condition so far as trade associations in manufacturing industries are concerned. Except for those milling industries which buy agricultural raw materials directly from their producers (and most of their purchases are made through middlemen) the normal marketing situation among manufacturing industries is one in which the buyers of specific commodities outnumber the sellers. Then too, buyers of almost all materials, services, and facilities are divided by their

⁵ See, e.g., *Standard Sanitary Manufacturing Co. vs. U. S.*, 226 U. S. 20 (1912).

special industrial interests into highly differentiated groups, across which the lines drawn by trade association organization do not cut. Thus manufacturers in a large number of different industries, represented by different trade associations, are purchasers of steel, lumber, leather, ceramic, and textile products—to mention only a few of the more obvious instances. And buyers' monopolies, in so far as they may exist and operate, are subject to legal restraints similar to those applying to combinations of sellers.* The total effect of this type of coöperative buying appears to be favorable, rather than adverse, to larger volumes of production.

These coöperative functions of trade associations, as outlined in the above list, are, if legitimately exercised, thoroughly constructive and conducive to larger production. The qualification of legitimacy means simply that these functions must, like many other phases of human conduct, be subjected to social control.

Without laboring the necessity for social control of trade association activities, and accepting the state of such control as it is, it still appears that these functions of trade associations, while carried on for the pecuniary benefits of their members, actually secure these pecuniary benefits through facilitating larger outputs of goods. Several of the functions outlined in the foregoing list (e.g., those relating to statistics, cost accounting, large-scale buying, commercial and industrial research) are identical with certain advantages of large-scale operation which we saw, in an earlier chapter, to be conducive to greater outputs of goods by single enterprises. Some others of the functions (e.g., those relating to standardization, credit and collection activities, trade disputes and ethics, exchange of patents) concern matters which are beyond the scope of activity of even the largest single

* See page 41, above, note.

competitive enterprises. All of them facilitate larger outputs of goods than would be produced in their absence.

This list of trade association functions and the brief analysis of their economic significance have to do only with the simplest phase of a complicated situation. The functions which have been enumerated are those which are carried on in the open and which are pointed to by the associations themselves whenever the question of whether trade associations are compatible with the public interest is raised. There are other activities of these organizations which are rather less obvious, and concerning which it is exceedingly difficult to obtain authoritative data. Such information as is available has been gathered with great effort by such fact-finding agencies as the Commissioner of Corporations and the Federal Trade Commission, and by the Department of Justice for evidence in legal suits brought against the associations. From such evidence as exists in commission reports and court records, certain other broad functions of trade associations may be identified. For the sake of completeness, therefore, the foregoing list of functions must be continued and expanded as follows:

15. *Regulation of Output.* As a means of restricting competition, manufacturers producing the same or similar commodities have been known to agree among themselves concerning the amounts of goods to be produced in specified periods of time. The trade associations of the industries concerned administer the agreements and act as arbiters of disputes among members concerning the agreements. The proper conduct of such arrangements usually requires also that the association keep the several members informed concerning the state of the industry as a whole.

16. *Price Fixing.* Trade associations have been peculiarly useful central agencies through which members

might agree concerning prices to be charged for their products. The methods employed have varied from outright and direct agreements to adhere to stipulated prices, to the more subtle practices associated with uniform cost accounting and "open price" activities. The keeping of uniform cost accounts makes it possible for the association to act as a clearing house for information concerning each member's costs. That this practice has led to uniform prices has been demonstrated in investigations by governmental agencies.⁷ The manipulation of prices in such instances has tended to be upward so as to equal or exceed the highest costs reported by any member. "Open price" activities have consisted of exchanges among association members of information concerning prices charged to purchasers and bids made on contracts or orders. A somewhat more obvious practice by which price fixing has been attempted consists in the operation by trade associations of central selling agencies. These are designed to market the entire outputs of all members and thus to constitute associative selling monopolies.

The first observation that may be made concerning these last two functions of trade associations is that both of them are, and long have been, illegal. There has been an overwhelming current of judicial opinion declaring them, each and severally, to violate the anti-trust acts and, even before these statutes were passed, to be illegal under the common law. It is not our purpose here to attempt an analysis of the legal status of each of these functions *per se*.⁸ It is necessary, however, to examine

⁷ See, for example, the detailed report issued by the Federal Trade Commission entitled *Causes of High Prices of Farm Implements*.

⁸ Convenient analyses of cases involving the legality of trade association practices are contained in Jones, *Trade Association Activities and the Law* (McGraw-Hill, 1922) and in National Industrial Conference Board, *Trade Associations, Their Economic Significance and Legal Status* (1925).

briefly the bearing which the present state of social control has on the quantities of goods produced by members of trade associations.

Trade associations exist only in a competitive order of industry and trade. If competition did not exist, trade associations, as we know them, could not conceivably exist. Earlier in this chapter it was stated that, in so far as the conduct of business comes to be regulated by relationships such as those obtained between members of trade associations, the effect is to restrict the scope of competition. In spite of this reduction in the number of specific modes of competition, it is equally apparent that trade associations perpetuate competition. Without the coöperation and mutual protection made possible by these organizations, it is probable that many of the separate companies would either combine voluntarily with each other, or succumb to the pressure of competition and ultimately be absorbed by their stronger rivals. The final phase of the process of competitive elimination would be monopoly. Hence trade associations, while standing between their members and the hazards of unrestrained competition, also perpetuate competition within fairly broad limits.

This conservative protection appears to be made necessary by our anti-trust laws and by the interpretation given to these laws by the courts. The terms of the acts themselves, as defined by judicial opinion, imply that the laws are based on the assumption that competition is socially good and desirable and must be protected. This postulate is becoming more and more difficult of justification. Yet the principle that "competition is the life of trade," given effect by the Sherman Act and various state laws, continues to direct the conduct of our business affairs. In many industries there are enterprises which would combine with each other if it were

possible to carry the consolidation far enough to make it worth their while. This has long been recognized as the most direct and effective means of avoiding the hazards and wastes of competition, and of securing the manifest productive advantages of large-scale operation. It usually is not possible to bring about combinations on the scale suggested here, for the reason that such combinations are illegal. The competitors therefore resort to the most attractive lawful expedient, the trade association. This expedient is merely a makeshift substitute for monopoly.

Many enterprises are prevented by the anti-trust laws from attaining the size and scope of operation which we have seen, in earlier chapters, to be conducive to larger production. The enforcement of competition also causes much labor and capital to be diverted from the immediate service of production to the business of competitive selling. In so far as the volume of production is a criterion of social benefit, it appears that it is not monopoly which ought to be proscribed by law, but rather the undesirable practices which tend to be associated with unrestrained monopoly.⁹ It is probable that, in some industrial fields, more goods would be produced by carefully regulated monopolies than are made under our present system of forced, but modified, competition.

From what has been said a fair conclusion seems to be that more goods would be made if there were no trade associations. That is to say, more goods would be made if there were no legally enforced competition—in

⁹ To propose a plan of "concentration and control" does not lie within the purpose of the present study. Our direct concern here is with what is rather than what ought to be, and our only reason for referring to the productive potentialities of regulated monopoly is to reveal the productive gains and losses due to associations of competitors. It must be clear, however, that one direct mode of social control would consist of a broader application of the judicial concept, "vested with a public interest." See pages 39-42, above.

which case trade associations would tend to go out of business. Taking into account, however, the fact that associations of competitors are derived from, and ancillary to, a competitive system, it is apparent that the associations themselves are not responsible for the wastes of competition. Hence our problem is not to compare the productive possibilities of a system of monopolies with those of a system of competition in which the kind of relationships represented by trade associations virtually are forced to obtain. The real question is whether the functions performed by these associations are in themselves conducive to greater or less production by the participants in them. They are ways of making money; are they also ways of making goods?

It hardly need be argued that the first fourteen functions of trade associations, as described in the foregoing list, are, in themselves, aids and facilities to production. If they fail to yield the productive benefits of which they are capable, it is because they are restrained from doing so by the last two functions outlined in the list. These latter relationships may be so restrictive of production as more than to offset the gains due to the former ones. Our problem, therefore, narrows down to a consideration of these two trade association activities: viz., the regulation of output, and price fixing. Carrying our elimination process one step further, it may be pointed out that both of these activities amount to the same thing, i.e., restriction of output. It is not possible to charge a high price for a commodity and at the same time to offer unlimited quantities of it for sale. Historically, as in the case of the early "pools," this has tended to be a self-destructive practice, for the reason that the lure of high prices tempts the parties to such an agreement to "flood the market."

Here, at last, is the crux of our problem: as time goes on do trade association policies tend to become more or

less restrictive of production? That is to say, is it becoming more or less necessary for individual enterprises, engaged in relations with other enterprises on the same industrial level, to make goods in order to make money? There are no objective data which will serve as basis for an answer. The few cases that are known in which output limiting agreements have been proved to exist tell us nothing concerning the significance or the real extent of the practice. We must resort, therefore, to abstract consideration of the *desiderata* involved.

It may be pointed out, in the first place, that an agreement of this kind—if actually adhered to—merely binds each agreeing party to produce not more than a specified quantity of goods. It does not follow that the total amount produced by all of the parties to the agreement will be any less than it would be if no such agreement existed. Unrestrained competition in selling may, for short periods of time, lead to the production of very large quantities of goods. Each producer will tend to make as large an output as possible and to try, through cutting prices, to take the largest share of the market away from his rivals. There always is, however, a point beyond which the making and selling of goods in this intensively competitive manner must react upon one or more of the competitors in a way which will force production to decline. There is, at any time, a limit to a market's capacity for buying goods, even at very low prices. There also is a limit to each enterprise's ability to withstand the financial strain of such vigorous competition. The result is that most or all of the concerns involved in such competition must, if long periods of time are considered, reduce their production to a point below the competitive peak.

An agreement to limit output prevents such a competitive struggle from developing and yet it does not

follow that the agreement will, in a long period of time, cause production to be any less or prices to be any higher. Let us suppose, for example, that three concerns making identical goods for the same market commence their careers with about equal capacities and equal advantages. After a period of intense competition such as was outlined above, Company A is making and selling 800 units, Company B is making and selling 500 units, Company C is making and selling 200 units, a total of 1,500 units. Now let us suppose that these three companies, instead of engaging in a competitive war with each other, had engaged instead in an agreement to limit output. Since they were of about equal size and advantage, a reasonable arrangement would have been for each to agree to produce the same amount. Thus if each company had agreed to limit its output to 500 units, the total production would have been 1,500 units, the same as the total produced by the three companies when their outputs were unlimited. At the same time any genuine tendency toward the growth of unused capacity in any plant would have been checked. In either instance the price charged would tend to be the highest one at which 1,500 units could be sold in the market. This does not, of course, prove that the total number of units made under the terms of an output limiting agreement would actually be the same as the number made in the absence of such an agreement. Nor can it be proved. The illustration above merely demonstrates a negative contention, viz., that it does not follow, from the fact of an output-limiting agreement, that total production will be any less or prices any higher than if no such agreement existed. The mutual desire of the participants to avoid the hazards of unrestrained competition would be reason enough for the agreement without regard to any ultimate reduction of total output.

Trade associations, because of the unity which they give to their memberships, have been likened to monopolies. They are properly "associative monopolies." A "true monopoly," as distinguished from those which are associative, is a single enterprise which has no competitor in the market in which it operates. Trade associations, as associative monopolies, do not have the same autonomous control over total production as is exercised by true monopolies. An agreement to limit output, unlike a true monopoly, does not have as its primary concern the determination of total production. The total amount of goods to be produced is secondary to, and derived from, the quantities of goods which the participants in the agreement, each and severally, agree to produce. That is to say, the total production schedule under the agreement is the sum of the individual production budgets of the parties to the agreement. Each party will join in the agreement only if the amount of output allowed to him conforms to the needs of his own situation. And each will be unwilling to grant concessions to a competitor which are greater than those received by himself. Thus the total quantity to be produced is arrived at only after taking into account the special needs and interests of each participant. And if, as time goes on, it is becoming increasingly necessary for each participant to make goods in order to make money, this fact will be reflected in the amount of output agreed to by each participant. Therefore, while agreements to limit output do not appear to be a force conducive to production, neither are they ultimately restrictive of production. In their effect on the processes we are studying here, they seem to be neither positive nor negative. They may more accurately be described as neutral.

As regards the pecuniary and productive significance of relationships between manufacturing enterprises on

the same industrial level we may draw three conclusions: (1) all of them are engaged in for the sake of pecuniary gain; (2) some of them facilitate production; (3) others, while not contributing to production, are not in any ultimate sense restrictive of production, for the reason that they do not prevent the operation of forces and processes which may, as time goes on, render it increasingly necessary to make goods in order to make money.

Enterprises on Different Industrial or Commercial Levels

In the section just preceding we examined the affinities which obtain between manufacturing establishments on the same industrial level. And, through studying the functions performed by unions of establishments thus drawn together, we sought the productive and pecuniary significances of relationships of that type. In the present section we are handicapped by the lack of any central set of tendencies about which to concentrate our study. There are, in the field of our present investigation, no reciprocal functionaries—like trade associations—whose activities will serve as a rough index to the relationships involved. And data are even more scarce in this instance than in the former one—for the very reason that there has not been any comparable crystallization of relationships about a limited number of functional centers. Therefore, in describing the business relationships between enterprises on different industrial or commercial levels, we will be able to take account of only the broadest qualitative circumstances and trends. And the conclusions that may be reached can be no more narrowly discriminating than the evidence on which they rest.

The essential characteristic of modern roundabout production is the industrial and commercial differentiation and specialization of its participants. Each manufacturing enterprise is a definite set of appliances for pro-

duction which are organized in a definite way. Derived from these physical limits is a third characteristic: each enterprise operates within a definitely limited segment of the entire productive range. Each is a link in a concatenation of processes. And, as a link, each enterprise extends no farther along the total productive range than is necessary to the purpose of interlocking with the other links which compose the entire concatenated arrangement. The theory of a chain is that each link between the first and the last should bind together the links which are superior and anterior to it in the series of links. And the theory of a good chain is that each link should possess exactly the strength required to hold together the two links with which it meshes, to the point of withstanding the maximum strain of which the entire chain is capable. As a matter of practical fact a chain, when subjected to a steadily increased strain, always will break in its weakest link. An ideal chain is one which would, under such circumstances, break in all of its links at exactly the same instant.

Regarded socially, and as a whole, modern industry is a congeries of chains which reach, each of them, from points at which the useful physical and chemical processes of nature cease, to points of contact with human use or consumption. Each chain is anchored to the natural processes with which it originates and from which it leads. The strain to which it is subjected is due to the kinetic and potential consumption behavior of people, exerted in our present economic organization through monetary demands for goods. As this strain is passed backward from one link to another, the test of the entire productive chain consists in whether the enterprises constituting the successive links are sufficiently strong to bear the strain. An important physical fact concerning such a chain is that, while some parts of it may be divided

or joined up with other chains, it must, nonetheless, have the beginning and the end described above. It cannot run in a circle. It has been suggested, for example, that the productive chain which involved the early steam engine was an endless one. The reasoning runs thus: in order to have steam engines, it was necessary to have iron; to have iron it was necessary to have coal; to have coal it was necessary to have steam engines to pump water out of the mines. Hence, the more steam engines, the more iron; the more iron, the more coal; the more coal, the more steam engines. There is a cumulation here perhaps, but certainly not an endless chain. If only enough steam engines had been made to get enough coal to refine enough iron to make enough steam engines, the entire process would have been a sterile one and both socially and commercially impossible of continuation.

The relationships between enterprises on different industrial and commercial levels are the ways in which they severally, as links in a chain, tie together the functionaries which are superior and anterior to themselves in the productive process. A graphic description of certain matters involved in such relationships is given by Professor Veblen:

By virtue of this concatenation of processes the modern industrial system at large bears the character of a comprehensive, balanced mechanical process. In order to an efficient working of this industrial process at large, the various constituent sub-processes must work in due coördination throughout the whole. Any degree of maladjustment in the interstitial coördinations of this industrial process at large in some degree hinders its working. Similarly, any given detail process or any industrial plant will do its work to full advantage only when due adjustment is had between its work and the work done by the rest. The higher the degree of development reached by a given industrial community, the more comprehensive and urgent becomes this requirement of interstitial

adjustment. And the more fully a given industry has taken on the character of a mechanical process, and the more extensively and closely it is correlated in its work with other industries that precede or follow it in the sequence of elaboration, the more urgent, other things being equal, is the need of maintaining the proper working relations with these other industries, the greater is the industrial detriment suffered from any derangement of the accustomed working relations, and the greater is the industrial gain to be derived from a closer adaptation and a more facile method of readjustment in the event of a disturbance,—the greater is also the chance for an effectual disturbance of industry at the particular point. This mechanical concatenation of industrial processes makes for solidarity in the administration of any group of related industries, and more remotely it makes for solidarity in the management of the entire industrial traffic of the community.

A disturbance at any point, whereby any given branch of industry fails to do its share in the work of the system at large, immediately affects the neighboring or related branches which come before or after it in the sequence, and is transmitted through their derangement to the remoter portions of the system. The disturbance is rarely confined to the single plant or the single line of production first affected, but spreads in some measure to the rest. A disturbance at any point brings more or less derangement to the industrial process at large. So that any maladjustment of the system involves a larger waste than simply the disabling of one or two members in the complex industrial structure.¹⁰

This description is of the matters which concern the productive—rather than the pecuniary—relationships between enterprises on different industrial or commercial levels. As a practical consideration, however, it is not possible to ignore the part played in these relationships by pecuniary or “business” factors. A concern which par-

¹⁰ Veblen, Thorstein, *The Theory of Business Enterprise* (Charles Scribner's Sons), pages 16, 17.

ticipates in this concatenated process is not as subservient to authority, or as automatic in the performance of its functions, as a link in an ordinary chain. It may, if it pleases, participate and make a sincere effort to coördinate its functions with those of the concerns which precede and follow it in the productive process. Whether it pleases to do so depends, in the last analysis, on whether there is a sufficient prospect of remuneration. The productive chain does more than pass goods through successive stages of fabrication. It also collects and distributes money. Thus, as there is a stream of goods moving from natural sources toward consumers, there also is a stream of money flowing back from consumers toward the same sources. The participation of the various functionaries in the chain depends on the prospect of getting a larger or smaller share of this money. The question is one of whether there will be a positive or a negative difference between what the concern pays for what it buys and receives for what it sells, and also of how large this difference promises or threatens to be. From such considerations as these it is apparent that an enterprise may be led not to coöperate in the total productive process and that it may thus disrupt the process in its entirety. And, further, it is apparent that the extent to which it may be induced to coöperate will be limited to that volume of business which promises pecuniary benefits. The consistent maintenance of coördinated and synchronized adjustments between divisions or branches of industry—of relationships between enterprises on different levels which are conducive to production—thus depends, in the last analysis, on considerations of pecuniary expediency. And our problem is whether these pecuniary considerations are leading to relationships which are more or less conducive to the making of goods than the relationships which formerly existed. What appear to be the

more important trends affecting these relationships are as follows:

1. *Industrial Integration.* As industrial concerns expand so as to increase the number of productive functions performed within single enterprises, there is an obvious reduction in the number of separate links which make up the productive process. To the extent, therefore, that industrial integration develops, there is a diminution in the number of points at which restriction of production may occur. The trend toward integration and the productive consequences of the trend have been described in earlier chapters.¹¹ In the present discussion it need merely be observed that this process is making for a more exact coördination and synchronization of productive functions than formerly existed.

2. *Market Information and Analysis.* There has been, in recent years, a constantly increasing resort to commercial research as a means of minimizing risks involved in making and selling goods. A number of useful indices have been constructed which serve as a basis for predicting costs, prices, and physical volumes of production and sales. The Federal Government, trade associations, and various state and private agencies are engaged in rendering this service to the business community.¹² In addition to the rather general information supplied by these agencies, there is a growing body of highly specialized data relating to specific markets and narrowly defined commodities. Such data are the fruits of intensive studies made by individual manufacturing and commercial concerns or by agencies employed by them. These studies, carried on systematically by each producer and each transporter and each middleman in an entire productive series, tends to furnish each with detailed knowledge of

¹¹ See pages 88-90 and 109-120, above.

¹² See Jerome, Harry, *Statistical Method* (Harper, 1924), Appendix A, for an enumeration of sources of business information.

the market in which he buys and that in which he sells and also of their potentialities for the future. With these facts and predictions to guide him, a manufacturer is able to formulate judgments which may be made effective through comprehensive budgets. A modern manufacturer's budget is a fairly exact estimate of income, costs, and output over rather long periods of time. It even includes, in some instances, provision for long-time expansion or contraction of the enterprise together with arrangements for financing the changes and buying needed equipment. To the extent that precision of this type is substituted for hit-or-miss methods of conducting industry and business there comes to be a more exact running coördination between enterprises on different industrial and commercial levels.

3. *Standardization of Products.* The tendency of manufacturers to limit their products to a few grades or models conforming to well-known specifications has been discussed, in various of its aspects, in earlier parts of this study. This tendency, widely known for its technological character, has also an important bearing on the purely business aspects of production. The various concerns which are related to each other in a concatenated process of production are buyers from and sellers to each other of more or less highly specialized commodities and services. It is to the interest of each concern to be able to supply the precise commodity or service that its customers want and also to be able to secure the precise commodity or service that it needs. The reciprocal nature of these interests tends toward an interlocking system of standards extending through an entire productive scheme. This makes for an easier transition of goods in process through the various industrial and commercial levels.

4. *The Use of Contracts.* The relationships between enterprises on different industrial and commercial levels

appear to be tending steadily toward a contractual character. The virtue of a contract is in the certainty which it gives to relationships. The special business purposes to which contracts are put are derived very largely from the trends described above. The study of markets brings to light prospective needs and prospective opportunities. The use of contracts of purchase and sale permits the immediate anticipation of these future situations. The application of standards to commodities and services makes possible the definiteness which is the essential characteristic of all contractual relationships. While there is no way of estimating the number or the importance of transactions covered by contracts, there is reason to believe that they are greater, on both counts, than they have been in times past. One evidence of this is in the rapid recent growth of commercial concerns whose very existence is predicated on purchases by contract. In this class are mail-order houses and chain stores, the strategic advantage of which lies in their ability to place contracts known as "backbone orders." Another indication consists in the very general substitution of trade acceptances for the antiquated system of "open book credit." Yet another is in the emergence of a large number of agencies and associations devoted to commercial arbitration.¹⁸ Most commercial disputes concern the performance of contractual obligations. Their arbitration has proved to be quicker, less expensive, and less likely to disrupt essential relationships than the older method of resort to law and courts. The fact that contracts give effect to positive and definite relationships extending over long periods of time causes their wide and general use to impart a high

¹⁸ For a catalogue of agencies engaged in commercial arbitration and a detailed account of their functions, practices, and decisions, see American Arbitration Association, *Year Book on Commercial Arbitration, 1927* (Oxford University Press, 1927), and Bloomfield, Daniel, *Commercial Arbitration* (H. W. Wilson Co., 1927).

degree of running coördination to the various phases of production. Contracts to *sell* finished products—or even the prospect of their sale—tend to be covered by contracts to *buy* materials or services or facilities running for some time into the future. Thus the relationships between establishments on different industrial or commercial levels is approaching what may be called a condition of contractual integration.

All of these tendencies appear to be toward a more complete coördination and synchronization of productive functions between the various levels of industry and trade.

Industrial Enterprises and Banks

Modern capitalistic industry is an institutional arrangement in which the final control of productive activities is vested in owners and creditors of industrial enterprises. This does not mean that every bondholder, every preferred stockholder, or even every common stockholder of an industrial corporation has a direct voice in its operation. It does mean, however, that every intelligent buyer of corporate securities has an opportunity to satisfy himself regarding the safety of his investment and to see that his interests as owner or creditor will be protected. It is unfortunately true that many such investors do not use the veto power which is their right. Yet, whether they use it or not, final control is vested in the owners and creditors.

Since financial interest dominates modern industry, the most highly concentrated power rests in the hands of those persons or groups possessing the largest amounts of wealth. The traditional sources of the greatest volume of liquid wealth—money available for the creation of new enterprises or the expansion of old ones—have been the commercial and investment banks. These banks, to

a very large extent, have been able to direct the development of American industry and to dictate terms and policies to going concerns. And the terms and policies dictated have been those favorable to the banks rather than to the enterprises themselves, except in those instances in which the two sets of interests may coincide. These are matters of common knowledge and their statement appears rather obvious and trite. The very thoroughness of our familiarity with these conditions attests to the age of the conditions. They are very old. Yet they have not been standing still in an economic world in which all things are moving. Just as industrial enterprises have changed greatly in size, in organization, in technology, during the last thirty, or twenty, or even ten years, so there also have been changes in the relations which they bear to financial institutions. Suppose, for example, that banks are coming to exercise less control, predatory or otherwise, over industrial enterprises, and that such control as is exercised by banks is coming to coincide more closely with the interests of the enterprises themselves. Such a supposition involves an important change process. It would not be possible to measure the extent or the degree of the change. Yet this supposititious process is an approximate summing up of what appear to be the broad facts of the case. The present trend of relationships between industrial enterprises and financial institutions is less obvious than the old and well-known condition. For this reason its characteristics can be described only as general tendencies rather than as accomplished and precise facts.

Banks make money without making goods. Yet they are purveyors of credit, which is a fundamental facility to both the making of goods and the making of money by industrial enterprises. Banks are, therefore, secondary producers of goods for the reason that they supply the

finances which, in the prevailing order of things, must be forthcoming if goods are to be produced. The willingness of banks to supply this wherewithal of production depends, as we have seen, not so much on the needs of the productive enterprises as on certain considerations of their own. In the case of commercial banks the most important of these considerations are the interest to be earned, the risk involved in the loan, and the condition of their reserves. The last of these considerations may prevent the extension of credit, and thus retard production, even though the first two considerations are entirely satisfactory to the bank. In the case of investment banks the chief concern is with the prospect of promoters' or underwriters' profits and with their ability to undertake and carry through the matter under consideration. All of this seems rather like both hitching the cart before the horse and letting the tail wag the dog. Instead of credit serving production, it appears that production is subject to the will or whim of credit.

There is an historical reason for this control of banks over industry. Banking is older in the institutional order of things than the capitalistic system of manufacturing. The medieval banks and hordes of treasure, which were the progenitors of modern banks, derived their substance principally from the extractive industries—agriculture and the mining of the precious metals. Expanding commerce yielded up still larger amounts of capital for the banks, although the very growth of commerce was dependent upon the ability of the banks to supply the necessary credit. Thus banking became a highly developed business while manufacturing was yet in its handicraft phase.¹⁴ As modern capitalistic industry emerged, large and increasingly larger aggregates of capital were

¹⁴ Cf. Hobson, John A., *The Evolution of Modern Capitalism*, pages 1-24.

needed for the building and expansion of factories. The banks were the only sources from which the needed liquid capital might be secured. Therefore the banks became both owners and creditors of the new industrial enterprises. The increased production due to the factory system made available still larger resources for the banks; and so the growth of industry and the growth of banking were cumulative, each contributing to the other. Yet while manufacturing enterprises were turning out large volumes of wealth, their needs for both fixed and circulating capital tended for a long time to increase more rapidly than their own abilities to supply it. Both the old enterprises and the constantly increasing new ones were compelled to cater to the banks to supply their financial needs. Hence the generally recognized dictatorship of banking over industry.

The historical fact that banks existed earlier than modern capitalistic industry, and so were in a powerful position when the factory system was born, appears to be the only reason for such a dictatorship. In certain countries in which the institutional development has been different from the general, the relationships of financial concerns and industrial enterprises also have been different. Germany is an outstanding illustration. In Germany investment banking has had its inception and its growth *pari passu* with the beginnings and growth of modern industry. And, instead of the banks invariably creating and governing the industries, the industries often have created and governed the banks.¹⁵ Likewise in Russia, with the reestablishment of investment banking by the Soviet government, the banks have been made subservient to the industrial enterprises and are charged with the duty of supplying the financial needs of industry.

¹⁵ The conservative policies of German banks toward industrial enterprises are described by Foxwell, H. S., *Papers on Current Finance* (Macmillan and Co., Ltd., 1919), pages 113-125.

In defense of the traditional control of banking over industry in America it often has been argued that bankers are experts in the problems of credit extension and that this expertness brings about a more effective allocation of capital and loan credit than could be secured if the banks did not dominate industry. It is patent, however, that the purpose to which the knowledge and judgment of bankers are directed is that of furthering the banks' interests rather than those of the industries. The two sets of interests are not always or necessarily identical. It often has happened, for example, that a bank has refused an essential supply of capital to an industrial enterprise for the good and sufficient reason that the transaction did not promise a sufficient gain to the bank. It often has happened also that banks have been led, by what were or appeared to be their own interests, so to deplete their reserves as to be unable to extend further credit, even though the industrial concern desiring a loan could exhibit positive evidence of its solvency and of the productive and pecuniary gains to be derived from the loan. In many instances such situations have led banks not only to refuse to extend new loans but also to demand repayment by their industrial debtors of all that already had been lent to them. These demands usually force the debtors to cease spending money on the production of goods and to bend their energies to collecting the debts owed to them and to liquidating stocks of goods on hand.

These are specific evidences of the way in which industry in America has been geared to a banking system instead of the banking system being geared to industry. They also are specific evidences of restricted production attributable to the money-making interests of the dominating banks. There are but two ways in which such restriction can be avoided or eliminated: first,

through a change in the financial position of industrial enterprises which would render them, to a greater or less degree, independent of the banks; and second, through a joining up of the interests of banks and industrial concerns, resulting in a more or less exact unity of these interests. It seems probable that both of these changes have been occurring with constantly accelerated momentum during recent years. As has been suggested, it is not possible to measure the rate of the change process, or to make any precise statement of its degree. Yet the broad tendencies can be demonstrated qualitatively and described in general terms.

Let us examine first, therefore, the proposition that a change is occurring in the financial position of industrial enterprises which is rendering them, to a greater or less extent, independent of the banks. Such change in this direction as is taking place is most marked in the case of large manufacturing concerns. Yet since the tendency toward large enterprises appears to be a characteristic of an increasingly wide range of industries, the most significant trends for the present purpose are those pertaining to the large concerns.

Manufacturing industries have become, in the United States, the largest single source of new wealth.¹⁰ The old situation, in which the demand for capital in industry was greater than the amount of capital supplied by industry, has been markedly modified. Most of the oldest and strongest manufacturing corporations have, by virtue of large incomes accruing over many years, been able to adopt a policy of "growing from within." This policy, briefly stated, is simply that of setting aside, as surpluses, a part of net operating revenues. And, since the existence of such surpluses is the best insurance against a credit stringency, it usually is the part of good business to adopt

¹⁰ See Table 2, page 55, and Table 4, page 57, above.

the policy. By supplying its own new capital and by keeping on hand a large amount of cash and quick assets, an enterprise is secured against the danger of inability to borrow and the acute pressure of forced liquidation with its accompanying inactivity. The use that a particular concern may make of its accumulated surplus depends entirely upon the immediate and prospective needs of the concern. Some enterprises—of which the United States Steel Corporation and the Ford Motor Company are outstanding examples—have steadily “ploughed back” into the business a large part of their accrued earnings. Others keep their surpluses on hand in liquid form over fairly long periods, thus preserving them intact for some anticipated need or to meet some unexpected emergency. Most of the large number of concerns whose accumulated surpluses are relatively important capital items probably follow both of these practices, investing with some regularity a part of their accumulations in plant, equipment, or materials, and saving a part for known or unknown eventualities.

Large manufacturing concerns, especially those whose productive processes are highly integrated, possess a financial flexibility which is entirely apart from the holding of large sums of cash and quick assets. It has been demonstrated that stocks of goods on hand may be made to perform the essential functions of quick assets. The best known instance of such a demonstration probably is the financial achievement of the Ford Motor Company during the stringent months of 1920 and 1921. On January first of the latter year the company had \$20,000,000 in cash and needed \$40,000,000 more. On April first the company had cash on hand amounting to \$87,300,000, all of which had been secured without recourse to borrowing. The purchase by the Ford Motor Company,

during this period of financial tribulation, of the Detroit, Toledo, and Ironton Railroad, excited wide comment. Then it became apparent that this integrative move by the Ford Company was a part of its plan for increasing its cash on hand. By making the railroad a service agency to its factories, the company so improved its freight arrangements as to cut down its manufacturing cycle from twenty-two days to fourteen days. This enabled the company to reduce its inventories by \$28,000,000 without impairing its operating efficiency and without risk of a shortage of materials. This illustration is, perhaps, a unique instance of financial flexibility, yet it appears to be broadly typical of what may be done by large manufacturing concerns through adopting organization and technical methods which are productively more efficient.¹⁷

If one gives even a very general consideration to the affairs of many of our large manufacturing corporations, he must be struck by the closeness with which some of their activities approximate the functions and practices of banking. A glance at their balance sheets usually reveals large amounts of cash on hand and on deposit in banks. Usually also there are great sums appearing in the assets column bearing such labels as "other securities owned." The E. I. du Pont de Nemours Company, for example, or any of a number of large oil or rubber or automobile companies, possesses a tremendous reserve capital in the form of securities which can be liquidated at any time. Thus these surpluses actually are supplying investment credit to other concerns, whose surpluses are, in turn, invested in the securities of still other concerns. The analogy between industrial enterprises and banks

¹⁷ See Ford, Henry, in collaboration with Samuel Crowther, *My Life and Work* (Doubleday, Page, 1926), pages 170-176.

becomes even more pronounced when we consider the fact that some of the former actually have established commercial banks for the purpose of supplying credit to their customers and thus getting cash from their deferred payment sales. The General Motors Acceptance Corporation and the Industrial Acceptance Corporation (of the Studebaker Corporation) are well-known banks of this type. It is true, of course, that these privately operated commercial paper houses must, if they are to handle a large volume of business, sell a considerable portion of their paper to outside investors. A large share of this paper is bought by commercial banks, but only on the same terms as other buyers. The authority for the original loan is vested in the commercial paper house which is itself a subsidiary of a producing industrial enterprise.

Intensifying this growing financial strength of great corporations are the tendencies toward the multiple-establishment enterprises, organized along horizontal or vertical lines, which were described in an earlier chapter. The pooling of the financial power of all the establishments into one common fund makes it possible for each to help, and to be helped by, the others. Instead of being individual sticks they are, as regards their financial strength, a bundle of sticks. And like a bundle of sticks, their consolidated strength is greater than the sum of the strengths of the individual constituents. In like manner the power of the group to secure specific items of credit is intensified by the greater amount and variety of security which can be offered.

Another side of the case is presented by the attitudes of the bankers. They are in the business of accepting deposits and making loans as well as the performance of a number of subsidiary functions. Many of their actual

or potential customers are financially as strong as, or stronger than, themselves. To such customers as these a bank is more likely to cater than to dictate.¹⁸ Is there a bank which would not welcome a part of the business of our billion-dollar industrial concerns, or even of our more numerous hundred- or fifty- or ten-million-dollar enterprises? Competition among the banks is evidenced by the wide installation of "new business departments" and by the constant expansion of services and facilities offered to customers. Such competition received much stimulation from the Federal Reserve System which, by virtue of the elasticity given by it to bank credit, broadened greatly the potential limits of the business which might be done by banks.

At the same time industrial enterprises are shaping their organizations and their policies in ways which demonstrate their growing independence of outside financial agencies and their assumption of mastery over banking institutions. Some careful students of present-day banking and business have summed up these internal tendencies of industrial enterprises as follows:

¹⁸ The "attitudes of the bankers," under discussion here, are difficult to describe in any precise way. All "attitudes" are non-substantial and evanescent psychological states. The nature of the change in attitudes which we are dealing with is illustrated by a recent informal occurrence. The directors and officers of a large manufacturing corporation which conducts its business on a world-wide scale gave a dinner at a hotel in New York. The purpose of this social gathering was the announcement, through speeches, of certain financial policies and methods which had been adopted by the corporation. Most of the guests were bankers, and these included presidents, vice-presidents, and other directing officers of banks scattered over most of the United States. At one of the tables, at which several out-of-town bankers were seated, the question was raised as to why these gentlemen had come such long distances for no other purpose than to eat dinner and listen to some speeches. Their unanimous answer was that they had been "ordered to come" by their corporate host. When an engraved invitation has the force of a command, the issuing corporation must exercise a large degree of control over those whom it desires for its guests.

. . . As time goes on and as banking accommodation becomes better and better recognized as a necessity, there is a tendency for larger enterprises to develop their own special organizations to deal with it. Time was . . . when the business house depended almost entirely upon the advice of the banker. He was the guide and philosopher, and too frequently a friend, to the business man, expanding or contracting the credit of the latter as circumstances required. This function of all knowledge could be exercised only so long as the industry was in a very simple condition. It is out of the question to-day for the banker, however skilled he may be, to know very much about more than, at most, few branches of business. In the great banks a very high degree of specialization is attempted, and given officers are required to familiarize themselves with the problems of particular kinds of industry. As they become highly special in their knowledge they tend to drift into the branches of business with which they have become best acquainted, or the managers of those branches of business tend to associate with themselves ex-bankers or financial officers familiar with banking whose function it is to look after their financial affairs. Thus in many cases the great business concern finds it worth while to develop a financial department of its own whose function is that of determining its borrowing policy, the form of its borrowings, conditions under which its credit is granted, its foreign-exchange commitments, and a variety of other matters. The importance of such financial departments of corporations is seen as the corporation itself increases in scope. In the case of some corporations it has even been thought well to develop its financial department actually as a bank or as something corresponding closely to a bank. This tendency would have gone farther, it is likely, had it not been for the complex relationships to either individuals or businesses which are assumed when a bank begins to take deposits. Therefore the corporation whose financial department has assumed an extensive and complex form finds it more expedient to organize a separate concern, which is sometimes a bank, but frequently a financing cor-

poration charged with the duty of conducting certain operations, largely in the interests of the parent company which brought it into existence. But it will probably be increasingly true that every corporation will develop a financial branch or division whose duty it is to study credit and to manage the finances of the enterprise in the most economical manner. The effect of such development is undoubtedly that of relieving regular banks of onerous duties and responsibilities which they may not be particularly well qualified to perform, and thus of simplifying their relationship to industry. Just as many great enterprises develop self-insurance and no longer rely on insurance companies, so many other enterprises will undoubtedly develop self-banking, and will rely on banks only to supply the broader and more general features of their needs. This does not diminish the importance and significance of banking, but, on the contrary, it enhances it. It suggests that whereas we may expect a very great increase in the number of banking offices and a very great diversification of the types of banking, we may also expect an individualization of banking, with the performance of banking functions by those corporations with a sufficient scope of business to warrant them in doing so. The assumption of these banking functions will, however, as already noted, be in most cases simply applicable to the immediate financial needs of the concern itself and will not result in the taking over of duties which involve the supply of credit to the public.¹⁹

This seems to be an adequate and thoroughly conservative summing up of the trend of relationships between industry and banking. Yet, as regards the question under consideration here, it seems probable that the effect of the development of financial branches or divisions within industrial enterprises is something more than "that of relieving regular banks of onerous duties and responsibilities." The larger and more important effect is to

¹⁹ Willis, H. P., and Edwards, G. W., *Banking and Business* (Harper and Brothers, 1925), pages 506-508.

render the industrial concerns, to some extent at least, independent of outside financial agencies.²⁰

Let us turn our attention now to the second of our two propositions, i.e., that the interests of banks and industrial enterprises are becoming more nearly identical. It is, in the first place, obvious that these interests are becoming unified to whatever extent the enterprises are actively engaging in the business of banking. The divergences of purpose which may exist when banks are the owners or creditors of industrial concerns disappear when the industrial concerns are the owners of the banks. Thus the tendencies described in the quotation above as ways in which industrial enterprises are becoming independent of banks also are significant as ways in which the interests of the two economic agencies are being unified. And they extend much farther than the establishment of specialized financial departments or of private commercial paper houses. Many manufacturing companies are becoming owners of banks which conduct a general commercial or investment business. In smaller industrial centers it is fairly common for banks to be founded by one or more local manufacturing concerns. In such cases the owners of the banks are their own best customers. In

²⁰ A somewhat different manner in which industrial corporations have become more nearly independent of commercial banks has been indicated by Professor H. P. Willis: "Owing to the very cheap money which has existed in our markets for some years past, not a few business concerns have found it more profitable to finance themselves through the stock market than at the banks. They have often found the local bank rather stingy in some parts of the country, rather inclined to charge high rates of interest, and not altogether broad visioned with respect to the development of the country. The result is that there have been great numbers of refinancings, and of resorts to the stock market through the issue of bonds and preferred stock and second preferred stock and every other kind of security; so that as a result, we have an abnormal condition in which the business house instead of applying to its bank, as it formerly used to do, often goes to the stock market for the accommodation that it wants in carrying on its business." *Hearings Before the Committee on Banking and Currency, United States Senate, on Senate Resolution 113* (February 29, 1928), page 15.

other instances the officers or principal stockholders of industrial companies buy large blocks of shares in financial corporations and become influential in their policies. We are thoroughly familiar with the fact that bankers are members of the boards of directors of many of our manufacturing and commercial companies. It is an equally important fact that industrialists and merchants are directors of many of our banks. In the field of investment banking, a large number of the most important firms are partnerships rather than corporations, and thus cannot be entered through the purchase of stock. There is a growing tendency, however, for large commercial banks to operate bond departments or to maintain separate securities companies which perform all the functions of investment houses.²¹

It is notorious that investment bankers have served as promoters and underwriters of many consolidations, mergers, and holding company organizations and that they have made profits from these operations which appear entirely incommensurate with the services rendered. Although it is very difficult to estimate the money worth of such services, we are not inclined to quibble with the general statement that the profits were, in some instances, exorbitant. There is reason to believe, however, that the attitudes of the bankers toward the companies thus promoted or underwritten tend to become

²¹ A new and significant function of such subsidiary securities companies has developed very recently. On March 23, 1928, the National City Bank of New York increased its capital and that of its subsidiary, the National City Company, by \$60,000,000. The avowed purpose of this increase was to enable the National City Company to purchase for investment the stocks and bonds of industrial corporations.

This is a new trend of commercial banking in the United States, although European banks (especially in Germany) long have been investors in commercial and industrial corporations. Other New York banks have signified their intentions of following the lead of the National City Bank and becoming owners of corporate securities. This appears to be a significant tendency toward a unifying of interests between banks and industrial concerns.

more conservative once the business of promotion or underwriting is concluded. The profits gained from these operations usually consist, in large part, of stock in the companies which have been financed. In this way the welfare of the investment house becomes intimately connected with that of each industrial corporation in which it owns stock. As owners of important equities in such concerns their own self-interest causes the bankers to become industrially minded—at least to a greater extent than they previously had been. Two of the best known of our giant holding companies engaged in manufacturing are the United States Steel Corporation and the General Motors Corporation. Both of these companies were conceived and organized by bankers. And the bankers who promoted them continue to own large blocks of their stock. In fact these blocks of stock may be regarded as among the chief assets of the bankers. It is difficult to imagine a gain to be made from any financial operations as bankers which would be large enough to justify a sacrifice of the companies in which they are stockholders. Nor is it probable that they willingly will permit any other group of bankers to reap any benefit at the expense of the companies. This is not intended as any condonement of the practices of extortion which have been engaged in by some investment houses. It is offered merely as one phase of the process by which there appears to be a growing unity of interest between banks and industrial enterprises.

There have been, and it is probable that there will continue to be, spectacular financial coups in which bankers make tremendous profits through the purchase and sale of industrial concerns. As long as such concerns can be bought and sold like commodities there is no prospect of an abatement of the practice. The possibilities in these transactions are broadened by the fact that an

entire enterprise may be bought as one going concern, like a steer on the hoof. And, just as the carcass of a steer may be disposed of as sirloin steaks, rump roasts, liver, hide, fertilizer, etc., so may the total going-concern-capitalization be split up for the market into bonds with various degrees of priority, preferred stocks which are participating, cumulative, redeemable, convertible, or what not, common stocks which may or may not endow the owner with the power to vote in the corporation's meetings, and even "rights" which entitle the holder to buy stock in the corporation. These rather puzzling debentures and certificates of ownership are the joint products which may be carved by a skillful manipulator from the capitalization of a single going concern. Sometimes the disproportion between the cost of the going concern and the return from the "financing" is so great as to make us wonder if the "service" is not bought at too great a price. Here, we say, is some one who is getting something for nothing. Especially is this true when no essential service is performed in the process. In recent years several closely held private companies which had been well managed and had "grown from within" until they reached large proportions, have been bought and sold in this manner without any apparent benefit to the companies, either pecuniary or productive. The cases of Dodge Brothers Motor Company and Lambert Pharmacal Company will occur to many persons as examples of such "financing." These are, we submit, instances of getting something for nothing—of making money without making goods. Such practices, however, lie properly outside the field of the present inquiry. We are examining here the pecuniary forces which restrict production and also the pecuniary forces which generate or induce production within manufacturing enterprises. Such manipulations as we have described occur outside

the enterprises themselves and, except for their effects on costs—which will be considered in the following chapter—have no essential consequences to the production of manufactured goods.

In the light of the history of corporate organization during the past few years, it is evident that the financial practices outlined in the preceding paragraph contain one phase which is seriously restrictive of production. In reaching this phase there is a typical procedure involving several steps: first, the purchase by a banking house or group of all the physical and “going” perquisites of some industrial enterprise; second, the reincorporation of the concern; third, the splitting up of its capitalization among a variety of types of securities. These categories of bonds, stocks, and rights are minutely differentiated as regards the incomes to be paid their holders and as regards their priority—their “closeness to the rails” or to the roof. The proportionality to obtain between these several classes of debentures and equities is carefully determined with reference to the prevailing state of the market for securities. The final step in the series is the matter of selling the bonds, stocks, and rights to investors or speculators. Yet the recent tendency is for not quite all of them to be sold. By taking advantage of a curious laxness in the corporation laws of our states, the promoting financiers may give entire control of the corporation’s affairs to the holders of a small number of shares of designated stock which usually is called “Class B Common.” The rule has been for the promoters to keep this stock for themselves. Thus, in a successful coup of this kind, the promoters sell stocks and bonds for a total amount which is greater than the amount originally paid for the property represented by the securities, and yet retain a fundamental condition of

ownership, i.e., control.²² This is the modern way of selling something and yet keeping it, of abdicating and yet remaining king.

The purely commercial aspects of this transaction—the purchase of an enterprise for a certain sum of money and the sale of securities representing it for a larger sum of money—has no bearing on the problem under consideration here. Yet the retention of complete control of the enterprise by the banker-promoters has an important bearing. The processes which have been indicated as ways in which it is becoming increasingly necessary, in manufacturing industries, to make goods in order to make money, tend, under such conditions of control, to become inoperative. The equities held by these latter-day financial strategists are hardly comparable to those owned by the promoters and underwriters of such concerns as the United States Steel Corporation or the General Motors Corporation referred to above. After a long time and a tedious “growing from within,” it is conceivable that they might be. Yet at present the equities represented by voting stock are very thin—as thin as air or water. They ordinarily are not productive of any dividends for the reason that all earnings above operating expenses are required for the payment of interest and dividends to the holders of securities of prior rating. The voting stockholders who control such an enterprise, because of the remoteness of any prospect of making money by making goods, may be led to adopt other methods of pecuniary gain. Thus they may use their control for purely “financial” purposes rather than in the effort to make money by making goods. There are many well-known ways of securing profits by “financial” opera-

²² For an enumeration and description of cases in which this has been done, see Ripley, William Z., *Main Street and Wall Street*, pages 78-117.

tions. One is the underwriting of new securities. The bankers who own the voting stock may decide that an issue of bonds or stock is needed for the purpose of expanding the enterprise. Their own banking houses are selected to perform the underwriting services. They are, of course, dealing with themselves. As underwriters, they charge themselves, as industrialists, a comfortable profit. The situation is reminiscent of the multiple personality of the Lord Chancellor in Gilbert and Sullivan's *Iolanthe*. The analogy breaks down, however, when we reflect that they do not pay themselves as bankers, out of their own pockets, as industrialists. The money is taken out of the pocket of the corporation in which they own only a microscopically thin equity.

Whatever of crudeness may exist in such operations as the above may be obviated by a clever and competent manipulator. There are more subtle methods of attaining the desired result than that of underwriting. One is by owning some concern which furnishes materials or services or facilities to the controlled company. It is an easy matter to cause the latter to buy its materials, services, or facilities from the former at very favorable prices. In case no other method is available there always is the possibility of a consolidation, a merger, or a holding company to be engineered and "financed" by the omnipotent bankers. Such practices are limited and restrained only by one consideration: it is not desirable to kill the goose that lays the golden eggs. Bankruptcy would mean loss of control and an end of the profitable business. It is conceivable, however, that, in case the accommodating goose is mulcted to the point of sterility, its voting stockholders will become indifferent to its health and welfare.

All this is hypothetical. What has been said concerning the machinations and devices of thin equity owning

voting stockholders is not offered as a list of common practices. Neither, however, are they purely imaginery. They are precisely the things which may be done by the controllers of such enterprises. The thorough development of this type of industrial control has occurred so recently that the general practices thus far associated with it are no criteria of the potentialities in the situation. Hence our suggestion of certain of them.

It is clear that industrial enterprises are not independent of banks in cases such as these. It is equally clear that the interests of the enterprises and of the controlling banks are not identical in such cases. And it hardly need be said that these controllers of industry may, out of their functions and policies of control, make money without making goods. The processes which, under ordinary conditions, are making it necessary to adopt the policy of making goods as a means to the end of making money lose their force when the controllers of policies are the owners of only thin equities in the enterprises concerned. This is a trend which is opposed to the broad current we have described.

No consideration of size, of organization, of technology, or of business relationships will overcome the restrictive influence of this abortive control. Yet it seems desirable that something should overcome it. There are a number of reasons for the desirability of this, not the least of them being that of permitting the processes which make it necessary to make goods in order to make money to operate. Here is a place for the exercise of social control: revision of the corporation laws of the several states could be made to remove the restrictions and other undesirable accompaniments of the situation. Professor Ripley, the leading champion of the emasculated non-voting stockholder, suggests that "direct action by the investing class, by boycotting all such offerings of securi-

ties, may give even more immediate results. But, in either or any event, no other safeguard against misuse of power by insiders is so likely to be effective as publicity."²³ Each and all of these methods are promising. And the tremendous popular interest aroused by Professor Ripley is highly encouraging. When the New York Stock Exchange could be induced, by the intensity of public opinion, to admit no non-voting stocks to the trading posts of the Exchange, a long step had been taken and a strong reaction registered.

The trend toward control of corporations through ownership of voting stock representing only thin equities is a superficial and transitory one by comparison with the more substantial processes described in this section of our study. It is so because it may be overcome or eliminated by any or all of the methods suggested above. The more fundamental changed relations between industrial enterprises and financial institutions are: first, the changed financial position of industrial enterprises which renders them more nearly independent of banks; and second, the joining up of the interests of banks and industrial concerns, resulting in a more nearly exact unity of these interests.

²³ Ripley, William Z., *Main Street and Wall Street* (Little, Brown, and Company, 1927), page 109. See pages 156-228 of this book for an outline of needs for publicity and of ways and means of securing it.

CHAPTER VII

PRODUCTION AND COSTS OF PRODUCTION

"THE highest achievement in business," says Professor Veblen, "is the nearest approach to getting something for nothing."¹ The "nearest approach" appears to consist in getting as much as possible from the sale of whatever one has to sell. This possibility is in no sense a uniform one which applies in like degree to all bargaining situations. The traditional horse-trader, for instance, is notoriously a person who tries to dispose of an old, shambling, draft animal for the price of a young and spirited thoroughbred. An industrial enterprise, on the other hand, must adopt a marketing policy which will enable it to sell, not one thing at the highest possible price, but rather its entire output at the price per unit which will yield the highest net proceeds from its total operations. In both cases the gain to the seller is measured by the difference between the costs involved and the price received. Yet whereas the horse-trader's gain is greatest (or his loss is least) when he secures the highest possible price for his horse, the industrial enterprise gains or loses by the amount of margin between per-unit costs and per-unit price multiplied by the number of units that are made and sold. The difference is a significant one.

If the per-unit cost of making a commodity were invariable, i.e., were the same in every instance regardless of the number of units made, and if the price at which each

¹ *The Vested Interests and the State of the Industrial Arts* (Huebsch, 1920), page 92.

unit could be sold were not affected by the number of units offered for sale, the judgments of those who control industry could be reduced to the simplest arithmetic formulæ. It would require no great exercise of the mind to know that gains could be increased ten-fold or a thousand-fold merely by increasing production in those ratios or that losses could be eliminated by ceasing to produce. It is because per-unit costs and per-unit prices have been found to vary with changes in the quantity produced and sold that those who control the policies of industrial enterprises are forced to formulate judgments instead of simply adhering to fixed principles of business conduct.

Costs and prices are variables which, in the case of manufacturing industries, tend to vary in specific directions when the quantities of goods made and sold are varied. That is to say, they are dependent variables. Any control which is exercised over them is largely indirect since their manipulation comes as a result of changed quantities of output, or of goods offered in the market. It is true, of course, that costs of production often are reduced by a reorganization of productive methods, and often are increased because of bargaining pressure brought to bear by some outside agency, as, for example, a trade union. In such cases, however, a new set of normal conditions has been established and per-unit production costs will now, as before, be large or small in accordance with whether the amount of goods produced is small or large. It also is true that manufacturers usually adhere to advertised prices or to published list prices when they offer their products for sale. Yet their ability so to adhere depends on whether they are able to dispose of their outputs at the stated prices. For short periods of time they may prefer to curtail production instead of reducing prices, thus avoiding the dreaded

"spoiling" of their markets. If the period of curtailment is long-drawn-out, the manufacturer may be (and often is) led to reduce his price to the point at which a larger output may be sold. There even are some instances in which it has been found that more of a certain article can be sold at a higher price than at a lower price. These instances have occurred in cases of selling articles which depend for their appeal on some feature of exclusiveness or which are not susceptible to measurement by objective standards or specifications. A producer who caters to an ostentatious clientele often is in this position. Yet the same principle applies here as in other cases; the only difference is in the level on which it applies. A scented toilet soap, for example, may be bought in larger quantities at a price of fifty cents than at one of only twenty-five cents. But it does not follow that even more would be bought if the price were raised to a dollar or two dollars or five dollars. Somewhere along the range of increased prices a point would be reached at which it no longer would be possible to sell the same output as formerly. There are differences in the behavior of costs of different manufactured articles. And the elasticity of the market for different articles also is different. Yet, in general, the per-unit costs of production of manufactured goods tend to decline as production increases, up to the point at which maximum efficiency is attained. In general, also, selling prices tend to decline as the amount of a commodity that is offered in the market increases.

Thus the production problem which usually confronts the manufacturer is one which may be stated thus: "Will my gain be larger from selling a small quantity of goods produced at high per-unit costs at a price high enough to include a wide margin of profit on each unit, or by selling a large quantity produced at low per-unit costs at a low price which will include a narrow margin of profit on

each unit?" The decision which each manufacturer will arrive at will be derived from a more or less accurate appraisal of his own peculiar productive and marketing circumstances. As regards his market, his chief concern will be with its elasticity. He will want to know how greatly and how rapidly his prices will have to be reduced as he offers for sale a constantly increasing quantity of his goods. As regards his productive circumstances, his principal interest will be in how much, and to what extent, his unit costs will decline as he increases the volume of his output. It is obvious that he will be equally thoughtful of the obverse of these matters: i.e., of how greatly prices can be increased if he offers smaller quantities of goods in the market, and of how high costs will become in case he lowers the amount of his output.

In a competitive industry a manufacturer may find that the determination of selling prices is entirely out of his hands—that he is unable to influence it by regulating the amount of goods that he offers in the market. The fact that other manufacturers are injecting the same or similar kinds of products into the market affects the price which he can charge. One of his competitors, for no better reason than because he is a superior strategist or has a more effective selling organization, may be able to sell large quantities of goods at a low price and at the same time to secure large profits because the size of his output makes his unit costs low. Our manufacturer, forced as he is to sell at the "competitive" price, will not be able to remain solvent—to say nothing of making a profit—unless he also can force a large output of goods through the market and thus secure low unit costs for himself. This is a chief reason for the fact that some manufacturing enterprises become bankrupt at times when certain of their competitors are making profits. It also is a reason for the adoption of brands and trade-

marks by manufacturers who hope, through this device, to differentiate their products from those of their competitors and thus to give them a quasi-monopolistic position in the market. Although decreasing costs of production have a uniform effect, in both competitive and monopolistic industries, of stimulating production, their effects have a special significance in competitive industries for the reason that the prices and costs of each producer are affected by the outputs of all the producers in the industry taken together.

The fact that larger outputs of goods by industrial enterprises result in lower per-unit costs (up to the point at which maximum efficiency is attained) is thoroughly recognized by economists in their treatment of monopolies.² The consensus of authoritative opinion takes it as an obvious fact that a single industrial concern (a true monopoly) often is led, by decreasing costs of production, to produce more goods than would be turned out by all the competing enterprises taken together if the industry were a competitive one. The commonly accepted corollary conclusion is that the monopoly, in order to dispose of its larger output, will be forced, if a long period of time is taken into account, to offer its goods for sale at lower average per-unit prices than those which would be charged by the competing enterprises.³ These condi-

² See, for example, Marshall, Alfred, *Principles of Economics* (eighth edition), pages 477-495.

³ This is why efforts devoted to maintaining competition, even if successful, do not furnish a resolution of the economic anomaly. The Sherman Act, for example, was intended only to enforce the constitutional prescription of freedom of enterprise and hence its effect probably was to intensify, rather than to modify, the conflict between making goods and making money. In many fields of industry production probably would be greater under monopoly conditions than under competitive conditions. This does not (and is not intended to) answer the anti-monopoly argument. Aside from the question of the volume of production, monopolies tend to have undesirable consequences to consumers' choices, to their employees, to the persons and companies from whom they buy, and to policies of government.

tions are so obvious in some instances that not only economists, but the public in general, refer to the enterprises concerned as "natural monopolies." It is unquestioned, for example, that a single railroad between two points can furnish transportation at lower rates than would be possible if there were two or three different lines competing for the business.⁴ The reason is that a duplication of railroad facilities and of the work of supervision gives rise to larger total fixed charges for the two or three competing roads than would be the case if there were only a single road.

This tendency to larger production in the case of a "true" monopoly does not apply in the same sense to the "associative" monopolies discussed in the preceding chapter.⁵ Monopolies of the latter class exist, not because there is only a single enterprise in the industry, but entirely by virtue of an agreement between separate enterprises. Production would tend to be not as large under such conditions as under those of "true" monopoly. It does not follow, however, that the combined outputs of the several concerns would not be at least as large as they would be if the concerns were in actual competition with each other. As stated before, it is entirely probable that the result of such monopolistic arrangements is merely to secure a more "equitable" distribution of production among the several enterprises involved.⁶ Each party to the agreement is given assurance that his oper-

⁴ Although prices under such conditions *can* be low, it does not immediately follow that they *will*. The dependence of a community on a railroad often is so great that, within broad limits, there is little elasticity of demand for the railroad's services. For this reason railroads and many other so-called "utilities" are declared by courts to be "vested with a public interest" and thus are made subject to governmental regulation of rates and services without any constitutional prescription being contravened. The announced policy of governmental agencies in regard to such cases is that the enterprises should be allowed to make a "fair return." See page 42, above.

⁵ See pages 194-199, above.

⁶ See pages 197, 198, above.

ations will not be impinged upon by "cut-throat" tactics employed by any of the other parties. In terms of costs and prices this means that each party will be reasonably secure against the helplessness which was outlined above as a characteristic of competitive industry. And, whether there is actual competition or associative monopoly, the need to have a large output in order to secure low per-unit costs is as pressing in one case as in the other.

Before proceeding further with our analysis of the relation between production and costs of production, it is necessary to explain why and how larger production by manufacturing enterprises tends to cause lower per-unit costs. The explanation cannot be reduced to a short formula, but it will be presented as briefly as possible.

The "capitalistic" system of industry is primarily one in which the physical plant and organization that are devoted to making goods are achieved through positive—and, to a large extent, irretrievable—commitments of capital by investors. All others of the special characteristics by which we identify the capitalistic system appear to be subordinate to this one. To a greater extent than any other known mode of production, capitalistic industry is dominated by physical plants and organizations. Human labor, while still necessary for the operation of a manufacturing enterprise, is employed, not for the immediate purpose of making goods, but rather to serve as accessories to certain features of the plant or, more broadly, to occupy particular positions in the organization. The judgments of those who control the policies of industry are thus regulated, in so far as they concern the employment of labor, by the physical and organic constitutions of the enterprises themselves. Decisions relating to financial arrangements and volumes of production also are determined, to a very large extent, by the same considerations.

Why do the physical plant and organization of a manufacturing enterprise exert such a widely determining influence over the production policies of the enterprise? The reason is contained in the fact which was stated above to be the primary characteristic of capitalistic industry. It is because the physical plant and organization of the enterprise have been achieved through the commitment of capital by investors. After these commitments have been made it usually is not possible to unmake them, although the original investor may be able to sell them to some one else. Only in so far as certain elements of the plant may constitute wasting assets is it possible ever to recover the commitments of capital which originally were made. The intangible results of the commitments, the organization of the enterprise and its "going concern value," cannot possibly be liquidated, and hence it is not possible to recapture the original commitments. Nor is it possible, in most instances, completely to convert the plant and organization secured from the investments from their original productive purpose to some other one. These elements usually are too narrowly specialized to permit any change in their functions. The physical equipment of a packing plant, for example, could not be used for making automobile tires. Nor would its organization or its prestige in the market be of any real use to it in the making and selling of tires. The result of these conditions is that commitments of capital, once made, are largely irrevocable and irretrievable. For this reason, the steady flow of costs from these commitments cannot be avoided by the enterprise to which they accrue. To meet these costs it is necessary that the enterprise have an income from operation which is greater than the immediate costs of the operation itself. In other words, these costs constitute fixed charges on the enterprise. They can be met only by producing and sell-

ing goods, and if the enterprise is to succeed according to pecuniary standards, the production and sale of goods must be sufficient to yield an income that will cover these costs as well as those incurred in operation. The remainder of this chapter will be devoted to the question of whether these commitment costs are causing the physical output of goods to become larger or smaller than it formerly was.

The costs which are due to commitments of capital will be called, in this study, "fixed charges." Precisely defined, they are costs or losses which accrue to an enterprise when it is not engaged in making goods, or which *would* accrue to it if it were to cease making goods. All other costs, those which result from operation and which would cease if operation were to cease, we shall call "operating expenses." This classification of costs will serve best for the purpose of this study, although it will be observed that it differs somewhat from the one commonly used by accountants.⁷

⁷ In the system of accounts prescribed for railroads by the Interstate Commerce Commission, these terms are given their standard meanings. "In general, operating expenses include all outlays except taxes, rentals, interest and certain kinds of losses and sinking fund appropriations, all of which are 'deductions from income.' Taxes and interest on funded debt are the chief 'fixed charges.' Depreciation and insurance are sometimes called fixed charges, but in the accounting system prescribed for railroads by the Interstate Commerce Commission, they are treated as operating expenses. . . . The reckoning runs as follows: gross income less operating expenses equals net earnings of operation. Net earnings of operation less deductions (taxes, rentals, interest on actual debts, etc.) equals net corporate income (or deficit). . . . Fixed charges represent a minimum limit on the net earnings of operation below which they cannot go without insolvency." Clark, J. M., *Economics of Overhead Costs*, pages 46, 47. See this book, pages 46-69, for a very complete analysis of the various accounting classifications used to differentiate permanent and quasi-permanent costs from those costs which are functions of operation.

The only justification that we can beg for our use of these terms in ways which do not conform to accepted accounting practice is that our problem is different from that of the accountant. Cost accounting is a method of allocating expenditures *after the fact*. In the present study we are seeking to discover the consequences of the fixed charges incurred to the physical volume of production.

In order to arrive at a definitive answer to the question posed above it will be necessary first to determine the exact nature of these commitments of capital which give rise to the fixed charges of an industrial enterprise. At the outset it is to be observed that all commitments are included, and not merely those which result from contractual obligations to pay. That is to say, the expenditure of funds secured from, or accruing to, common stockholders is a commitment of capital which generates fixed charges in exactly the same sense as expenditures of funds secured from selling bonds to investors. In short periods of time, there is an important practical difference between commitments originally derived from these two sources: interest must be paid to bond holders in order for the enterprise to remain solvent, whereas dividends to stockholders may be withheld for reasons of necessity or expediency. Another merely formal difference consists in the fact that bonds are contractual instruments denoting creditorship, while common stock certificates represent only specified equity rights and do not give the holder a right to demand any payment at all from the corporation. In spite of these superficial differences, however, the common stock type of commitment causes, in any considerable period of time, fixed charges which are as insistent as those derived from the bond type of commitment. It is precisely for the purpose of paying these fixed charges (and as much more as possible) to common stockholders, that any enterprise normally is conceived and operated. The broad generalization that all commitments of capital, of whatever derivation, give rise to fixed charges will be given more specific meaning in the following outline of special forms taken by commitments.

In an industrial enterprise, the first and most obvious commitments of capital which give rise to fixed charges

are the investments in plant and equipment—in the enterprise's physical self. The purchase of these physical components of the business is undertaken for the sole reason that their productive use promises to yield a return at least sufficient to cover the costs, i.e., to return the amount of the investment plus interest at the current rate on the amount invested in the event that the physical components consist of wasting assets. In case the plant and equipment are of such a nature that they can be replaced from operating expenses as rapidly as they waste or wear out, they must promise to yield a perpetual return (similar to an annuity) equal to interest at the prevailing rate on the amount invested. When serviceable units of plant or equipment are replaced by new and presumably better units, the new must promise to be more economical than the old by at least enough to cover the interest on the new investment. When a labor function is converted into a machine function, the saving in operating expenses due to the smaller employment of labor must promise to be at least equal to interest on the price of the new equipment. It is immediately apparent that all of these costs will persist whether the enterprise is operating or not.

Another type of fixed charge which arises from commitments of capital in plant and equipment is due to the mere passage of time without regard to productive use, and also is distinct from time costs in the form of interest. These are the charges for depreciation and obsolescence. In a well-managed enterprise these costs are taken into account by the creation of reserves into which is diverted a sufficient amount of the income of each accounting period to replace the plant or equipment by the time it becomes obsolete or so far depreciated as to be no longer serviceable. Depreciation is, for most types of plant and equipment, almost entirely a function of time, and occurs

without regard to the use of these physical components of the enterprise. And obsolescence can be estimated only by reference to the passage of time. The result is that the charges accrue irrespective of whether the particular physical elements on whose account they accrue are being employed productively or not. Yet unless they are so employed no income is being created from which the necessary reserves may be fed.

A less tangible (and entirely unrecoverable) form of commitment which generates fixed charges to an industrial enterprise is composed of investments in organization. Modes of administration and of carrying on production processes are costly to acquire, and, having been acquired, are expensive to maintain. Yet the ultimate success of the enterprise often depends on their being maintained. The entire set of devices and arrangements discussed in an earlier chapter under the generic name "scientific management" are of this kind. So is the "working nucleus" of employees which it is the part of judgment to retain, along with the staff of supervisors and experts, even though the enterprise is working only at part capacity, or is completely shut down.

A special aspect of such investments in organization consists in the costs of placing and training employees. Some enterprises report that it costs them an average of several hundred dollars to select and train a new worker. This cost is largest and most conspicuous in cases where the position to be filled requires that the incumbent learn a great many things or adapt himself to a special and complicated situation. An illustration is afforded by a salesman who has become expert in selling his particular line, is thoroughly familiar with his territory, and is well and favorably known to his "trade." These qualities of the salesman may be worth more to the company he represents than their acquisition has actually cost the com-

pany. What measures his worth to his employers is not the cost of his employment and training, but rather the amount of loss which would accrue from losing, or having to dispense with, his services.

Besides the plant and organization which constitute the physical self of an industrial enterprise, every successful enterprise possesses an *alter ego* which is its character as a "going concern." Although this character tends to be a function of the physical self and the market in which the enterprise operates, it is, from a business point of view, the most important aspect of the enterprise. After the commitments of capital in plant and organization have been made, the specific commitments lose their identity and become merged in a total result which is, in a successful enterprise, the going concern. The value of this total is something entirely different from the inventory value of all of its constituents. It is derived from capitalizing the net earnings from operation. In case this value becomes greater than that of its physical appurtenances, the enterprise has undergone what amounts to a further commitment of capital. Let us suppose, for example, that a manufacturing concern which cost \$100,000 to build and organize for production, has been able to secure such large earnings that its worth is now \$200,000. That is to say, the present and prospective gains from its operations are so large that a purchaser is willing to pay \$200,000 for the business. In case he actually buys it for this amount it is apparent that, if he is to make a success of the business, he must make it earn enough to pay the fixed charges on a commitment of capital \$100,000 larger than it formerly was. Even if the transaction is not actually made, the consequences of the offer of \$200,000 are precisely the same as if it had been made. Let us assume that the present owners of the business decline the offer. By declining they have

caused their commitment to be \$100,000 larger than it originally was because their decision has displaced an opportunity to receive an amount \$100,000 in excess of their original commitment.⁸

The issuing of stock dividends by corporations is a special instance of the general situation outlined above. Although the new stock certificates which are distributed do not legally bind the corporation to pay anything at all to the persons holding them, it is done with the tacit understanding that the corporation is to pay dividends on the new stock at the same rate as had applied to the stock which formerly was outstanding. In such a case there has occurred an act which is, in effect, an additional commitment of capital. Why it is so in effect is simply because the fixed charges of the enterprise have been increased.

Such accretions to capital value as have just been outlined are, according to Professor Veblen, vested interests, or "legitimate rights to get something for nothing." His argument to that effect is as follows:

Capital—at least under the new order of business enterprise—is capitalized prospective gain. From this arises one of the singularities of the current situation in business and its control of industry; viz., that the total face value, or even the total market value of the vendible securities which cover any given block of industrial equipment and material resources, and which give title to its ownership, always and greatly exceeds the total market value of the equipment and resources to which the securities give title of ownership, and to which alone in the last resort they do give title. The margin by which the capitalized value of the going concern exceeds the value of its material properties is commonly quite wide.

⁸ That this displacement is, in effect, a commitment of capital is consonant with the doctrine of "opportunity costs" which has been thoroughly elaborated by Professor H. J. Davenport. See his *Economics of Enterprise*, pages 61-67.

Only in the case of small and feeble corporations, or such concerns as are balancing along the edge of bankruptcy, does this margin of intangible values narrow down and tend to disappear. Any industrial business concern which does not enjoy such a margin of capitalized free earning-capacity has fallen short of ordinary business success and is possessed of no vested interest.

This margin of free income which is capitalized in the value of the going concern comes out of the net product of industry over cost. It is secured by successful bargaining and an advantageous position in the market; which involves some derangement and retardation of the industrial system,—so much so as greatly to reduce the net margin of production over cost. Approximately the whole of this remaining margin of free income goes to the business men in charge, or to the business concerns for whom this management is carried on. In case the free income which is gained in this way promises to continue, it presently becomes a vested right. It may then be formally capitalized as an immaterial asset having a recognized earning-capacity equal to this prospective free income. That is to say, the outcome is a capitalized claim to get something for nothing; which constitutes a vested interest.⁹

There is no occasion to quibble over the generalizations of Professor Veblen as set forth in the first paragraph of the quotation above. The mode in which earnings are capitalized and the relation of such capitalization to underlying physical assets appear to be precisely stated—although the common proportion between capitalization and original cost may be exaggerated. As regards the means by which the capital gains are secured, however, there is more to be said than is contained in Professor Veblen's statement. At least more needs to be said concerning the means employed by manufacturing enterprises. In this connection it is not enough to say that "it

⁹ Veblen, Thorstein, *The Vested Interests and the State of the Industrial Arts* (Huebsch, 1920), pages 104-106.

is secured by successful bargaining and an advantageous position in the market." Bargaining strategy and marketing advantages are a great deal older than the "new order of business enterprise." In fact they probably began when business began. And vested interests probably have existed ever since human relationships commenced. That they are more spectacular to-day than formerly is only to be expected since all other phases of business have become more spectacular. It would be difficult to prove that the possibilities of getting something for nothing are any greater to-day—in relation to other possibilities of business and industry—than they have been in the past. On the other hand, it can be demonstrated that a new propulsive force has been generated which, to some extent, offsets the older restrictive ones. This force is fixed charges. The successful going concerns depicted by Professor Veblen are such only by virtue of the fact that they are able to pay their fixed charges. And the increased capitalized value which they attain is gained only by their ability to pay fixed charges on sums of capital larger than the commitments originally made in them. Under conditions of modern industry gains are as much dependent on keeping per-unit fixed charges low as on maintaining high selling prices. This means that physical production must be large enough to keep low each unit's share of fixed charges. And increased capitalization due to increased immediate or prospective earnings may be secured as well from lowered per-unit fixed charges as from higher per-unit selling prices. Such increases thus tend to come from still larger physical outputs. With this insistent pressure of fixed charges it is difficult to reconcile the assertion that the larger capitalization which is due to larger earnings "involves some derangement and retardation of the industrial system,—so much so as greatly to reduce the net margin of production over cost."

In manufacturing industries, where fixed charges are a powerful determining influence, the more precise formula seems to be: Capitalization is large because earnings are large; earnings are large because per-unit fixed charges are low; per-unit fixed charges are low because production is large. It does not appear, therefore, that the industrialist is getting something for nothing, or that he can get anything (but losses) for nothing in terms of physical output.

An illustration of this fact is afforded by the condition which recently has existed in the British textile industry. During 1926 some of the cotton mills of Lancashire were entirely shut down. Others were operating on reduced schedules. The reasons given for this inactivity were that prices had been made inordinately low by the large production of American and Japanese cotton manufacturers and that Lancashire mills could not cover their costs by producing and selling at the prevailing prices. Mr. J. M. Keynes, asked for an opinion, made a study of the pertinent costs of operation and of non-operation. The conclusion he reached was that profits would be greater—or, more accurately in most cases, that losses would be less—if the mills would adhere to full-time production schedules than would result from their inactivity. The reason he gave was that it would be better for the mills to reduce per-unit costs by maintaining large outputs than to have to pay the high per-unit costs due to part-time operation or to meet the fixed charges which accrued to the idle plants. Mr. Keynes' argument was sufficiently convincing to induce a large number of the manufacturers to follow his advice.¹⁰

In the United States we are accustomed to think in precisely the same terms in reasoning about railroads. It is axiomatic that a railroad flourishes or languishes in

¹⁰ *New York Times*, December 18, 1926.

accordance with whether its volume of traffic is large or small. As regards railroads we often draw so fine a discrimination as to conclude, under certain conditions, that a railroad's losses from operation are smaller than the losses which would occur if operation were to be discontinued. The broad reason is "overhead costs," though we believe that "fixed charges," as defined above, would be a more complete explanation.

Less conspicuous, perhaps, but no less effective, is the same influence as it applies to manufacturing industries in the United States. Enterprises in many fields are engaged constantly in reducing costs by increasing production. Several recent issues of an American manufacturers' journal have been devoted to methods of cost reduction. Approximately fifty descriptions are given of exact ways and means which have been used successfully by as many different manufacturing concerns. The companies whose practices are described are well known and represent quite various industrial fields, including automobiles, steel, textiles, paper, machinery, electrical equipment, and sundry novelties and specialties. In some of the cases the effects of the improved practices on the volumes of output are not given. In many of them, however, it is shown that the savings have been achieved by methods which facilitated or caused larger outputs of goods.¹¹

The preceding discussion has been in no sense an argument that all increases of production result favorably to the enterprises which engage in them. It means only that they are favorable in their effects when means can be found to reduce costs thereby in an amount great enough to offset the attendant price reductions. It seldom occurs that the entire capacities of a majority of manufacturing

¹¹ *Manufacturing Industries*, Volume XIV, Nos. 3, 4, and 5 (September, October, November, 1927).

enterprises are utilized for production. Thus, in spite of the business prosperity which has obtained in this country for the past three or four years, it is well known that only about two-thirds of the productive capacity of the United States Steel Corporation has been steadily in use. Although it is probable that a part of this unused capacity is "secondary capacity" rather than "excess capacity,"¹² the fact that it is not in use is an avowal by the company that its use would not result in gain to the company. The manufacturers' journal referred to above has recently conducted a symposium among manufacturers concerning the extent to which increased production will cause increased net earnings.¹³ The consensus of the opinions expressed appears to be that manufacturers are in danger of attaining such large outputs that prices will be forced below a profitable level. This amounts only to saying that there is, at any time, a point at which larger production may result in smaller gains. This point is the frontier of conflict between making goods and making money. As regards the effects of costs on production, we wish to know whether, as time goes on, the frontier is drawing nearer or is being pushed farther away. The means whereby production may profitably be increased are sought and found because of the pressure of fixed charges. If fixed charges of manufacturing enterprises increase, more of such means become available and are used.

To this point in the present chapter an attempt has

¹² See pages 173-175, above.

¹³ *Manufacturing Industries*. The series of articles by Mr. W. L. Churchill entitled "Pricing for Profit *versus* Pricing for Volume" (*Volume XI*, Nos. 2, 3, and 4, February, March, April, 1926) argues that there is a general danger of increasing sales volumes to the point of no profit. Mr. John G. Wood (*Volume XII*, No. 1, July, 1926) essays a mathematical demonstration of the same tendency as it applies to the concern of which he is president. In the same issue Mr. E. N. Martin, in an article entitled "Method to Fix Fair Selling Prices," shows a means of avoiding "no-profit" orders which is employed in the sugar refining industry.

been made to trace the consequences of fixed charges to production. The general conclusion reached is that fixed charges cause production to be larger than it would be if there were no fixed charges. A corollary is that each industrial enterprise will tend to increase its output if and when its fixed charges become greater. In order to determine, therefore, whether the influence of fixed charges is causing the frontier of conflict to move nearer or farther away, it is necessary to make time comparisons which will show whether fixed charges are growing smaller or larger. If it were possible to compare the fixed charges of a representative group of enterprises to-day with those of the same enterprises in, say, 1900, and to allow for changes in all conditions of production which affect operating expenses, the answer to this problem would be so highly definitive that it could be expressed as a percentage. Unfortunately this is not possible for the reason that it is not possible to secure the necessary data. The nearest approach to usable statistics that we have is the official estimates of capital invested in industry which were presented in an earlier part of this study.¹⁴ These figures probably are fairly accurate approximations of capital investment and, as such, are significant to the question under consideration. Yet they do not consistently apply to the same set of enterprises; they include the new as well as the old. And fixed charges, as we have seen, arise from sources wider than original investment, or than replacement value, or even than present worth.

In spite of the lack of means for quantitative measurement, an entirely reasonable decision of the question appears to be that fixed charges of manufacturing enterprises have increased and are increasing. The following list of ways in which the increase is taking place is not offered as a complete account of the entire process, but

¹⁴ See Table 3, page 56, above.

rather as an indication of the general trend. In the list are included special phases of fixed charges as they are related both to the physical plant and organization of an enterprise and to its activities as a "going concern."

1. The general increase in the physical size of establishments and of enterprises is giving rise to larger fixed charges. This is, perhaps, the most obvious way in which commitments of capital in specific manufacturing concerns are increasing. The facts of this process and the reasons for it were reviewed in an earlier chapter.¹⁶

2. The replacement of old equipment with new—and supposedly better—equipment, a process which is taking place constantly in manufacturing industries, causes fixed charges to become larger. The gain from the productive use of the new equipment must promise to be not only of sufficient size to cover the costs of the capital invested in it, but enough larger to include also the gains which might have been derived from the use of the equipment which was displaced.

3. The integrative tendency which has reached a high development in modern industry causes a pooling of fixed charges within a single enterprise. This condition forces the entire set of establishments which comprise the integrated concern to operate as a unit. An unintegrated manufacturing plant which buys its materials in the open market will, if it reduces its output, also reduce its material costs in about the same proportion. But an integrated enterprise, if it shuts down its fabricating plants or operates them on a reduced schedule, will be compelled to assume losses accruing to its materials plants as well as those directly due to the inactivity of its fabricating plants. This condition applies to all of the means of producing goods or furnishing services or facilities which are embraced within the integrated company.

¹⁶ See pages 78-98, above.

4. The growth and use of more elaborate modes of control give rise to higher fixed charges within an enterprise. There is no more striking evidence of this growth than that afforded by the Federal Census of Occupations. In 1880 there were 173,000 clerical workers in the United States; in 1920 there were 2,951,000. Although not all of these clerical workers are employed in manufacturing industries, the indications are that the proportional increase has been as great in this field as in any other and that there has been a strong tendency toward increase in each separate enterprise. The costs of clerical labor are, to a large extent, fixed charges of the enterprises employing the labor. Even more precise and unavoidable fixed charges of this type are those which arise from the administrative techniques and devices described in an earlier chapter as "scientific management."¹⁶ The rather steady increase of fixed charges on this account is plain. The use of these methods of organization and control has had its entire growth within the past four decades.

5. Many of the "operating expenses" of manufacturing enterprises are being converted into fixed charges. A part of this change is due to the increased use of contracts of purchase and sale and to the growing legal and ethical responsibility for the observance and completion of such contracts. Thus a manufacturing concern which is under contract to buy certain quantities of materials is compelled to take the materials at the price and at the time specified in the contract. To refuse to complete the con-

¹⁶ An interesting account of how the adoption of such techniques and devices makes larger production necessary is the article by Milton C. Herrmann, "Results Under Scientific Management," *Manufacturing Industries*, Vol. XII, No. 2 (August, 1926). Mr. Herrmann tells how the Herrmann Handkerchief Company found scientific management suited to a small plant as well as to a large one. The company found, however, that the adoption and maintenance of scientific management forced it to increase its output in order to operate profitably—for the reason that fixed charges had been increased.

tract renders the concern liable to a penalty and endangers its standing in the market. In times past, when such contracts were less extensively used than they are at present and purchases ordinarily were made in the "open market," it was possible for manufacturers to escape an unfavorable market by closing down their plants or by reducing the scale of their operations. Under such circumstances the cost of materials was an operating expense to the enterprise. But when the desire of a concern to assure itself of a steady and adequate supply of materials (or fuel, or power, or any essential facility) has led it to enter long-time contracts with the suppliers of the needed element, it patently becomes less easy and less desirable to suspend or to reduce production. Particularly is the desirability less when the enterprise has protected itself by entering into *contracts to buy* materials or other elements only as such action was made necessary by its entering into *contracts to sell*. Yet, in any event, such contracts to buy cause the costs of whatever is covered in the contract to become a fixed charge of the enterprise until such time as the contract has been completed. Another general class of costs which is tending, in many enterprises, to be converted from an operating expense to a fixed charge is labor costs. As labor organizations become more highly organized and possessed of greater bargaining power this tendency becomes more marked. Through collective bargaining over wages and conditions of employment, labor organizations often are able to negotiate agreements which are binding to the employer without also being binding to the individual workman. That is to say, a workman retains his right to leave the employment at will; such right is secured him by the Federal Constitution and may not be abrogated by contract. But the employer, to a greater or less degree, *does* give up his right to discharge or lay off his

employees.¹⁷ It is the power of the labor organization, more than any legal responsibility he has incurred, which places him in this position. When such a condition is reached, labor costs have ceased being purely operating expenses and have become, to a greater or less degree, fixed charges.

6. In many of the branches of manufacturing industry, the risks attendant upon the enterprises are coming more and more to be reduced to fixed charges. A part of this tendency is due to the wider use of certain devices of accounting. Reserves for obsolescence or for various contingencies are outstanding among these devices. The increased use of insurance, and the expansion of insurance to cover all sorts of hazards and liabilities, is another way in which this tendency is growing. Yet another consists in the maintenance of means for "hedging" or otherwise contracting away the risks of the market. The allocation of certain amounts of gross income to reserves, the payment of insurance premiums, and the costs of maintaining agencies for shifting risks are, each of them, fixed charges of the enterprise.

7. We already have seen that the enhanced capital values of successful industrial enterprises constitute what amounts to increased commitments of capital and hence give rise to increased fixed charges. Although the enhancement of capital value may be due to nothing more

¹⁷ An extreme form of this condition has been reached in certain enterprises in the clothing industry. In these instances employers have been led to guarantee employment of at least forty weeks in each year to their employees. The "Jacksonville Agreement" between bituminous coal miners and mine operators, while not coming within the field of manufacturing industry, is well known and affords a spectacular illustration of the at least partial change of labor costs from operating expenses to fixed charges. The agreement has, of course, terminated and is now defunct. The impossibility of its renewal appears to have been due to the inability of the mining concerns involved in the agreement to pay this amount of fixed charges. This inability, in turn, probably was caused by excess capacity and over-employment rather than by the principle of the agreement itself.

than lower interest rates, or may be only a temporary condition brought on by a transient period of prosperity, there is evidence that successful enterprises (virtually by definition) have rather steadily attained larger capital values for more substantial and permanent reasons. One such reason is efficient internal operation—which means keeping unit costs low. Another is “good will,” or favored standing in the market. Both of these conditions cost something, as has been shown in the case of the former one. The maintenance of “good will” engenders a permanent and insistent cost to the successful enterprise which it is nothing more than “good business” to meet. The ability of the enterprise to maintain its position, its ultimate success or failure, is involved in whether such costs are met. Thus these costs, comprising the actual paying out of money, are fixed charges of the business. As “good will” becomes greater the payments of money made in the interests of “good will” tend to become larger. Thus advertising expenses (although their effects probably are negative when an entire competitive industry is considered) tend to grow larger, and must continue to grow larger, as an enterprise achieves a more favored position in the market.¹⁸ These expenses of maintaining “good will” are, of course, a different category of costs from the charges assumed in the form of larger dividend payments which were described above. The assumption of responsibility for larger dividends is a *cause* of the successful concern’s enhanced capital value. The increased

¹⁸ A different type of expenditure for the sake of retaining “good will” is strikingly illustrated by the recent activities of the Ford Motor Company in re-equipping its plants. The decision to discontinue the manufacture of the old type of Ford automobile and the consequent expenditure of enormous sums for new equipment adapted to the manufacture of an entirely different type of automobile appear to have been induced by the very fact that the favorable position in the market of the Ford Motor Company was threatened. To maintain that favorable position it seemed necessary to make a drastic and expensive change in its product.

costs of maintaining the capital value is a *result* of its enhancement. Both types of costs to the enterprise are fixed charges. In successful enterprises both types of fixed charges tend to increase.

It will be observed that the growing fixed charges in the above list, except those which are exclusively functions of a "going concern," arise out of the change processes described in earlier chapters of this study. This circumstance testifies to the cumulative character of the processes which are, in manufacturing industries, making it increasingly necessary to make goods in order to make money. Each of the developments outlined in the preceding chapters appeared to possess justifications of its own. The physical advantages of large-scale operation are translated into pecuniary ones; the benefits of organization and security which come from vertical and horizontal combination are sought only because they promise associated benefits in the form of larger gains; the adoption of improved means and methods of production and of management occurs for the sole reason that there is a prospect of profit from their use; the new types of relationships between enterprises, contractual and otherwise, have come about because of the acquisitive interests of the concerns entering into them. All of these processes have developed because they are ways of making more money. We also have seen that they result in the making of more goods. And, when the consequences of these changes in the form of fixed charges are taken into account, it appears that a propulsive force has been generated—one which renders it increasingly necessary to make still further changes and to produce still larger quantities of goods.

In an earlier part of this chapter it was pointed out that the fixed charges which are due to commitments of capital tend to be determined, in their amount, by the

prevailing rate of interest. As regards such actual commitments of capital as the expenditures made for plant, equipment, and organization, a more accurate statement would be that the resultant fixed charges tend to be determined by the rate of interest which prevails *at the time the commitments are made*. This distinction is an important one. It means that changes in market rates of interest have no effect upon the fixed charges arising from commitments of capital which have been made before the changes in interest rates occur. This condition is obvious in the case of borrowed capital. Suppose, for example, that a corporation whose credit standing is regarded as "normal" issues bonds at a time when the rate of interest on such loans is six per cent. Its bonds, in denominations of one hundred dollars, pledge the corporation to pay the holder of each bond six dollars per annum until the issue of bonds matures. It makes no difference whether the interest rate becomes higher or lower so far as the contractual relation between the corporation and its bondholders is concerned: the corporation may and must continue to pay six dollars per annum to the holder of each bond. This fact is widely known as the reason that the principal value of a bond tends to increase as rates of interest become lower and to decline as rates of interest become higher.

The same principle applies—although with somewhat less exactness—to commitments of capital made directly by the owners of the enterprise, without recourse to loans being taken. In the case of a corporation the owners are its stockholders. These owners, like the bondholders, are led to make investments in the enterprise because it offers, at least in prospect, a return as large as that afforded by the current rate of interest on loans of equal risk. It is the business of the enterprise to pay such a return to its stockholders—plus as much more as is

possible. In case it succeeds in paying more, it has assumed larger fixed charges—as already has been explained. A change in the rate of interest will have no effect upon the fixed charges which the corporation already has assumed.¹⁹ To the owner of shares of stock the amount of his investment is a price which he has paid for the right to receive an income from the corporation. The income right thus purchased must promise as large a gain as could be secured from lending the same amount of money at the prevailing rate of interest. The minimum requirement of a successful enterprise is that it assume the fixed charge of paying to the owner an income equal to the displaced income. The amount of the displaced income is determined by the rate of interest prevailing at the time the purchase was made. A change in the rate of interest will only cause the principal value of the income to change—just as in the case of the bonds described above.

If a long period of time be taken into account it is possible that fixed charges due to specific commitments of capital may be shifted to other accounts than the one originally affected. If, for example, interest rates were to decline gradually and steadily for a number of years, many enterprises would be able to refund their bonded debts at the lower rates. Yet the tendency would be for the amount of interest saved to accrue as fixed charges to the account of stockholders (in the form of larger divi-

¹⁹ A change to a lower rate of interest may induce competitors to enter the field occupied by a concern whose earnings on its investments are at a rate higher than the concomitant rate of interest. Yet a multitude of technical difficulties often impede such entrance. And it appears also that the possibility of borrowing capital at a rate lower than the rate of its earnings on its investment gives the established concern an opportunity to strengthen its own position. This opportunity may be as great to such a concern as to its competitors and probably is superior to that of its merely potential competitors.

dends) or to that of wage earners or other functionaries. Or, as seems most probable, the amount saved in interest on bonded indebtedness would tend to be diffused as fixed charges to a number of different accounts. Another tendency offsetting the decline of interest rates would be that of the enterprise to increase the amount of its borrowing as the rate became lower.

The changed principal values which result to investments from changes in rates of interest have no bearing on our discussion of fixed charges. Yet they are deceptive in that they may appear to be a way of "getting something for nothing." Because of larger savings, more flexible arrangements of banking, and the more thorough exploitation of available natural resources, the secular trend of interest rates has been downward for the past three or four decades. The resulting enhanced principal values may have furnished a part (but only a part) of the substantiation for the argument of Professor Veblen which was quoted a few pages ago. Yet such substantiation is not very substantial. A person who holds a bond or a stock certificate which has enhanced in value solely because the interest rate has declined is no better off as a lender or owner than he formerly was. If he sells his bond or his stock certificate at the new and higher price, he will have to spend all that he gets from the sale in order to buy another income which is equally large and equally certain. Clearly there is, in such a case, no realization of "something for nothing." If such a realization actually occurred it would be an equally true statement, during a period in which rates of interest are rising, that owners and lenders are "getting less than nothing for something." The only changed principal values which have any bearing on the present discussion are those which come from changes in the fixed charges of an enter-

prise. The payment of higher or lower dividends, the increase or the reduction of "surpluses," or the issuance of stock dividends, are changes of this type.

It is to be observed also that the larger production induced by increasing fixed charges, while ordinarily accompanied by narrower margins of profit, does not always result in lower per-unit prices for the goods produced. It was stated above that the usual effect of offering more goods for sale in the market is a lowering of prices. The statement is an obvious one when applied to any very short period of time. In longer periods, however, it appears that the tendency to lower prices may be—and often is—offset by certain opposing tendencies. These tendencies are due to rising costs which make it impossible for producers to lower their prices. Those who supply materials and services and facilities to an enterprise often are able to charge higher prices for what they furnish for the very reason that the enterprise is enjoying the benefit of large-scale operations and large output. How this is done may be illustrated by the case of labor costs. Many of the most powerful labor organizations appear to have adopted the opportunistic policy of trying to secure for their members as large a part as possible of any new gains accruing to the enterprises in which they are employed. The results of the successful practice of this policy—higher wages or shorter hours—often mean immediately higher costs of production to the enterprises concerned. These mounting costs may prevent the lowering of per-unit prices on increased output. But how are such enterprises able to dispose of larger outputs and yet not lower the prices of their products? This question may be answered somewhat differently in the case of each enterprise. And yet there seems to be a broad answer which applies to all of them. It rises from the very fact that suppliers of materials, services, and facilities *are*

able to charge higher prices for that which they furnish, and the further fact that this condition is widespread and affects a great many different enterprises. The larger payments by many concerns to these functionaries cause larger purchasing power to operate in the markets for their several products. This means, of course, that the demands for the products are stronger than they formerly were. This greater demand enables the enterprises to dispose of larger outputs without lowering their prices. Thus while an immediate increase of output ordinarily will force a reduction of price, a long-time gradual increase of output may be balanced by an increasing demand for the product.²⁰ This is the broad explanation for the fact that, over long periods, production may be increased without any lowering of prices.

There are, however, many instances in which it is clear that the pressure of fixed charges causes prices to decline. Perhaps the most striking evidence of this tendency is afforded by the "backbone" orders so assiduously sought by many manufacturing concerns. In order to reduce per-unit costs to a minimum, manufacturers often solicit large orders at prices only slightly higher than the operating expenses incurred in producing the goods. After thus assuring fairly steady operation for their plants, they seek to make their profits on such other sales as they can make at higher prices. The recent steady growth of chain stores, "cut-rate" stores, "manufacturers' outlet" stores, and mail-order houses has been engendered by the willingness of manufacturers to accept large orders at low prices. Another evidence of the same tendency is to be

²⁰ This is merely an application to long-time market trends of a principle which is used frequently to explain short-time relations of output to price. In cyclical periods of prosperity, for example, it often happens that most commodity prices become higher in spite of the fact that the physical volume of production has increased. The generally accepted reason is that the purchasing power in the hands of buyers has increased, with a consequent increase in the demand for goods.

seen in the modern practice of "dumping." In order to secure the benefits of low unit costs by maintaining large outputs, manufacturers are led to sell their "surplus" goods at low prices in foreign markets. In this instance the low prices obtain in a different market from that in which the goods are made and in which the low costs are obtained.

The fixed charges which are due to commitments of capital in industrial concerns give a new quality of immortality to modern enterprises of this type. Since the commitments are, to a large extent, irrevocable and irretrievable, the fixed charges which arise from them can only be met by perpetuating the existence and operation of the enterprises. It often is said that the "immortality" of modern corporations is conferred on them by virtue of their corporate charter. The charter, however, seems to be no more than a superficial fiat—an acknowledgment by the issuing political authority that business and industrial enterprises are essentially immortal. Under the handicraft system of production, the existence of an enterprise ordinarily was no longer than the time that the master of the concern remained engaged in it. Whenever he chose to withdraw from the operation, or upon his death, the enterprise ceased to exist. A son might continue the business, but in such a case the old enterprise had been succeeded by a new one. This was because such a concern possessed no character of its own but was merely a reflection of its owner, and also because the chief interest tied up in it was the occupational interest of its owner. A modern manufacturing corporation presents a striking contrast. The death or withdrawal of an official, a director, or a stockholder, usually has no effect on the continuance of its operations. If it should chance, for any reason, to become insolvent, it is turned over intact to its creditors or is sold for their benefit. In

case it is sold, the new owners have their capital invested in it and ordinarily must operate it in order to meet the accruing fixed charges. The amount of fixed charges may, of necessity, have been reduced. But the enterprise usually goes right on being a "going concern," and, if successful under the new régime, may again expand its fixed charges in any of the ways that have been mentioned. Thus its life persists. It is only when its further operation does not promise a gross return large enough to cover its operating expenses and its fixed charges other than capital costs that it perishes. This sometimes occurs—but infrequently. Occasionally it happens that an industrial concern is so badly conceived as to be doomed to inactivity from its inception. Again, some enterprises are so badly worsted in the competitive struggle as to become worn out and defunct. And there are times when an entire industry is totally or partially wiped out by some innovation or some change in demand. Thus the growth of the automobile industry has been accompanied by the demise of many concerns which formerly made bicycles and buggies. These, however, are exceptional circumstances. And it is to be observed that such defunct enterprises tend to be superseded or succeeded by others which are, in their turn, spurred to production and long kept alive by their respective fixed charges.

It seems, therefore, that fixed charges have the effect of making an industrial enterprise a "going concern" and also of keeping it going for an indefinitely long time. With allowance for temporary disturbances and interruptions, a manufacturing enterprise is governed in its productive operations in much the same way as a workman who is employed in some process at an automatic machine. The efforts of the workman are regulated by the speed of the machine. In like manner the productive activities of the enterprise are dominated, to a large

extent, by the pressure of fixed charges. If the speed of the machine is increased, the productive efforts of the worker are speeded up. Similarly the productive efforts of the enterprise must be increased if and when the pressure of fixed charges becomes greater.

Yet another simile may be drawn from the case of the man working at the machine. He does not work any faster than the rate set by the machine. Neither is a manufacturing concern induced by its fixed charges to increase its output of goods to a point beyond that which promises the largest gain to itself. The only claim made here is that the fixed charges of most enterprises are tending to increase, and that their increase is making it profitable to produce more goods.

In this chapter we have sought to analyze costs of production in manufacturing industries, to discover their trends, and to trace the consequences of these trends to the volume of production. We have found that the fixed charges of enterprises in this field are increasing. We also have found that the increase of these fixed charges is making it constantly more necessary for the enterprises to make goods in order to make money. What bearing does this conclusion have on the opinion of Professor Veblen which was quoted at the beginning of the chapter? The opinion was that "the highest achievement in business is the nearest approach to getting something for nothing." Perhaps this is true. Let us assume that it is —although it cannot be regarded as a new truth for the reason that it was postulated long ago in the hedonistic psychology of Jeremy Bentham and in the economics of the Ricardian classicists. There is little reason to believe that this "highest achievement" is in any sense a modern development. It probably is as old as the institutions of private property and exchange. Large fixed charges, on the other hand, are of comparatively recent development

and the indications are that they are steadily becoming larger and more insistent in their bearing on production. Thus, while the "highest achievement" remains unchanged, the "nearest approach" appears to be growing constantly more remote. This, at least, seems a reasonable conclusion concerning manufacturing enterprises.

CHAPTER VIII

FOR BETTER OR FOR WORSE

A DANGER which underlies almost every broad generalization consists in the multitude of unwarranted implications which may be drawn from it. This fact imposes a heavy burden of discrimination upon the reader and also a duty upon the writer carefully to delineate the scope of the conclusion he has reached. It is a consciousness of this responsibility which causes the author to add this final chapter. Our story is told. The telling has consisted of an attempt to indicate a variety of unfolding industrial processes and to interpret and appraise them in relation to a single economic problem. There remains only the need to tell what the narrative means—and what it does not mean.

In the first chapter of this study the reader was introduced to two conflicting hypotheses which have, each of them, served as foundations on which economists have based theoretical systems. Their differences seemed to rise largely from the baffling epistemological riddle—the distinction between ideality and reality. For want of a standardized name which would be narrowly enough denotative and broadly enough connotative, we called the lack of correspondence between social interests in making goods and individual interests in making money by the phrase, “the economic anomaly.” The reader was asked to focus his attention upon the problem: “Can the economic anomaly be resolved?”

The second chapter reviewed and refined this problem.

The conflict between making goods and making money was shown to be, not a natural law or an immutable antagonism, but rather a function of purely cultural circumstances. From this demonstration we arrived at the conclusion that a complete resolution of the economic anomaly could be achieved only through a reconstruction of the rules which apply to our material culture. Two fairly well-known reconstructive proposals, communism and anarchism—either of which would fulfill all of the requirements of a resolution—were presented for consideration. In regard to these ways out of our difficulty, the position was taken that, unless one or the other of them would promise more than a mere solution to our problem, they should be avoided because they themselves probably would give rise to even more serious problems. No humane person would bathe a dog in nitric acid for the single purpose of ridding him of fleas. A complete resolution, while possible, did not seem desirable. Hence we sought to discover if there were modes of compromise by which the special restrictive influences might be modified. We found that law might be (and is) employed as an instrument of compromise—but that the postulates of our political Constitution concerning private property and freedom of enterprise set fairly definite limits to the modification which may be effected by this means. Hence for our further reasoning we adopted the basic premise that almost all productive economic activity is necessarily dominated by the acquisitive interests of those who engage in production. It was suggested that a change may be taking place in the consequences to production of these very acquisitive interests. More specifically it was suggested that changes are occurring in modes of organization and methods of production which are making it increasingly necessary *in manufacturing industries* for producers to make goods in order to make money. We

reasoned that such a tendency, if it were established in fact, could only mean that the frontier of conflict between social and individual interests is being pushed steadily farther away—to the extent that manufacturing industries are concerned. There would be, by constant progression, a modification or partial resolution of the economic anomaly. Hence we sought to identify and to appraise the processes within manufacturing industries which bear upon the problem we are studying.

In Chapter III an attempt was made to identify these processes and to indicate when and how they came to exist. The succeeding chapters were devoted to appraising specific aspects of these processes as they are related to the economic anomaly. All of the trends and tendencies studied are, in a sense, distinct and separate from each other. Each of them possesses individuality comparable to that of the brick, or the lumber, or the steel, or the architect's plans which go into the construction of a house. And yet the sum of all of them, like the finished house, possesses unity and coherence.

This sum is our conclusion. Its most restricted statement also is its broadest one. It is that *as time goes on it is becoming increasingly necessary, in manufacturing industries, to make goods in order to make money.* Simply that and no more.

The scope of this generalization has been confined within the limits set by the data from which it rises. These data relate only to manufacturing industries. We should be reluctant, without first having examined the several sets of relevant facts, to express any opinion as to the extent to which this conclusion may or may not apply to types of production other than manufacturing. Yet it is apparent that it would apply to the hand trades, agriculture, merchandising, and the extractive industries to the degree to which the processes we have studied exist and operate in those fields. Our judgment is that they

do so exist and operate. But to indicate, even by rough approximation, the extents and exceptions in these cases would require far-reaching researches.

Our conclusion also must be confined, for the present at least, to the manufacturing industries of the United States. This limitation is not made necessary by any essential difference in the incipient processes; the same influences exist in all industrial countries. The cause lies rather in the fact that the influences, while present, are more or less inoperative in most of those parts of the world where mechanized factories prevail. With the exceptions of the United States and Japan, manufacturing nations appear to be affected with at least partial industrial paralysis—which is, of course, a consequence of the late war. The disorganization of industry and of commerce, the pyramiding of debts and taxes, and the intensifying effect of unstable monetary systems are sufficient to explain the failure of the processes to operate. It also must be borne in mind that the tendencies we have described arise only when “private property” and “freedom of enterprise,” as defined by our courts, are guiding constitutional principles. The abrogation of these principles, reaching its highest form in Fascism and Sovietism, has the effect of repressing the tendencies. Without wishing by our analogy to suggest any assumption of the precision of “exact” science, we may compare the quiescent state of these processes in Europe just now with the failure of a laboratory chemist to secure a “standard” reaction from an experiment without first standardizing his apparatus and other conditioning influences. The reaction is potentially present, but will not emerge into actuality under the given conditions. The processes we have seen operating in American industries are incipient in European industries, but they are not able to break through the thick shell of surrounding circumstances. One further indication—it is hoped

an unnecessary one—of a limit to the scope of our generalization. We have not attempted any explanation of the broad fact of increased production. That the volume of goods and services “made in America” is greater to-day than ever before is known by even the most casual observers. And a multitude of statistical evidences are available to those who care to examine them. The amount of the total national income of the United States for the year 1926, as estimated by the Bureau of Internal Revenue, was recently announced. It was ninety billion dollars. This total is 43% larger than that for 1921. In terms of averages this means an increased per capita income of persons gainfully employed from \$1,637 in 1921 to \$2,210 in 1926.¹ Nor is this merely a fictitious “money” gain. That it signifies an increased production of goods and services is evidenced by the fact that the general price level was somewhat lower in 1926 than it was in 1921. The conclusion we have reached in this study does not explain this manifestly larger production. It merely holds that the cumulative processes which we have described have caused the volume of production to be larger than it would have been in their absence. Many other factors have contributed to the total increase.²

To make definite the relationship which our conclusion bears to the economic anomaly, it is necessary to refer again to the conflicting ideas which were outlined in the first chapter of this study. Adam Smith, because his arguments are outstanding and his conclusions typical, may be taken as the champion of one side of the argument. Professor Veblen is a competent representative of the other side. Both of these scholars agree as to what

¹ A part of this increase may have been due to cyclical changes of business rather than to permanent elements of growth.

² Tugwell, R. G., *Industry's Coming of Age* (Harcourt Brace, 1927) suggests a large—and apparently comprehensive—set of reasons for increased production in the United States.

constitutes economic motivation; both begin with the premise that productive activity is induced by the prospect of gain or material benefit to those engaging in the activity. With this postulate our own argument is in complete accord. It is only in the conclusions reached that any disagreement exists.

Apropos of the business man, Adam Smith asserts that "the study of his own advantage naturally, or rather necessarily, leads him to prefer that employment which is most advantageous to the society." Having thus appraised in terms of social welfare the consequences of the business man's selection of employment, Adam Smith goes further to say that "by pursuing his own interest he frequently promotes that of society more effectively than when he really intends to promote it." ³ This is the *summum* of economic idealism. And it is immediately apparent that it is the philosophical tenet on which our whole system of economic liberty rests and to which it appeals. Utilitarian liberalism is merely an expansion of this doctrine.

Professor Veblen is of a different mind. Speaking of the same impersonal functionary, the business man, he says that "the smaller product he can contrive to turn out for a given return in terms of price, the better it suits his purpose. The highest achievement in business is the nearest approach to getting something for nothing." ⁴ There is a realistic quality about this. And we see at once that it epitomizes the defects in the existing order against which the new "liberalism" of social control is directed.

In terms of the present situation Professor Veblen appears to have the better of the argument. It often happens that a realistic critic can present a more cogent case than can an idealistic apologist. But we must take

³ *Wealth of Nations*, Book IV, Chapter II.

⁴ *The Vested Interests and the State of the Industrial Arts*, page 92.

care or we shall do a grave injustice to Adam Smith by deciding this issue in terms of the present situation. In the midst of his eighteenth-century interests he had never heard of the present situation. He was, in his generation, as sincere a realist and as unsparing a critic of his contemporary economic order as Professor Veblen is to-day. He fought for economic liberty and democracy at a time when there was little of either on the earth. Those very qualities of realism and criticism in his writing and thinking are responsible—probably to a greater extent than any merits in the words of any other man—for the adoption of the constitutional principles of private property and freedom of enterprise by all of the leading industrial nations. In applying his arguments to the present situation no disrespect or unfairness to his ideas has been intended. The real violence that is done him is by persons who regard him as a defender of the faith—who appeal to his authority for substantiation of their own rationalized views regarding matters that Adam Smith knew not of. We have quoted his opinions in the present instance simply because they continue to be contemporary ideas⁵ and also because they state so exactly

⁵ The idea that an essential harmony obtains in our economic system is frequently expressed. A striking statement of it is given in the November, 1927, issue of a news letter published monthly by a distinguished New York banking institution. After surveying many of the bright spots in the present industrial and financial situation, the letter ends with the following *non-sequitur* conclusion:

"This chapter in our industrial history affords a demonstration of the essential validity of the orthodox theories of natural law in the economic world, upon which is based the free system of industry commonly known as the capitalist system. It shows this system to be controlled by inherent forces which work ceaselessly to improve the industrial organization, to enlarge the production of desirable things and to effect a wide distribution of the benefits of industrial progress.

"This period, however, is not different, except perhaps in rapidity of development, from other periods in the history of industry. All the development of the past is the result of the same natural laws and tendencies. Society is racked almost to the point of dissolution over theories of conflicting class and group interests, although evidence of the fundamental harmony of interests is always in view."

the economic ideal that the conduct of individuals *should* subserve the interests of society.

There appears to be no device of logic which will reconcile the conflicting views of Adam Smith and Professor Veblen. Taken in their entirety they are so mutually antagonistic that it is not possible for both of them to be exactly true. There cannot be two precisely obverse curves of normality describing a single set of behavior data. Neither can the two conclusions be regarded as complementary to each other. Yet there seems to be truth in both of them, and the whole truth in neither of them. Our own opinion is that both are exaggerations of truth. Adam Smith describes a central tendency of economic conduct and lays such emphasis upon its conformity to a norm that he states his conclusion as a static natural law. Professor Veblen so stresses the lack of conformity of certain elements to the norm that he concludes that there is no such norm—and hence there is an opposite one. If each of them had qualified his generalization along lines indicated by the facts, both might have been accurate and entirely free from mutual contradiction. Thus Adam Smith might have stated positively that the productive activities of individuals *do* subserve the material interests of society except under those circumstances in which the individuals' interests are advanced most by not subserving the interests of society. And Professor Veblen might have stated negatively that the productive activities of individuals *do not* subserve the material interests of society except under those circumstances in which the individuals' interests are advanced most by subserving the interests of society. Conclusions such as these may be objected to on the grounds that they would not be significant. Yet we maintain that they would be. From such propositions as these it may be possible to identify

—perhaps even to remedy—the elements which make for non-conformity.

Either of the above propositions, the positive one or the negative one, accurately expresses the position we have taken in regard to the identity between social and individual interests in production. We have attempted to go beyond this point, however, and to demonstrate how, in one important field of economic activity, it is becoming increasingly necessary to make goods (and thus promote an avowed social end) in order to make money (which is the end the individual seeks).

This is not a resolution of the economic anomaly. One important conclusion which we reached after an examination of the influences which condition production was that no complete resolution was possible as long as our constitution remains what it is and our courts interpret it as they do. Nor is there any prospect that the processes we have described will ever lead to a state in which there will be no frontier of conflict between making goods and making money. As long as men have to exert themselves in the organization and carrying forward of production there will continue to be a real or a potential frontier of conflict. If it ever becomes unnecessary for men so to exert themselves there will no longer be an economic system. All of the material things upon which men depend for the satisfaction of their wants will become what the economists call "free goods," and there will be no question of coördination between social and individual ends. But that, as the Theosophists say, can never happen in this incarnation. The point at which the productive interests of society and those of individuals will exactly coincide is infinitely far away. As long as the processes we have described are in operation they will tend toward an approximation of this point. But, being infinitely distant, the point can never be reached.

Taken either separately or together the trends which

we have found do not constitute Progress. The human goal of happiness is so highly personal and so subject to isolated and extraneous influences that it is not possible to formulate the concept of Progress in any broad social sense. That which we have studied is in no sense a movement toward an ultimate goal; it is merely Change. We cannot even say positively that it is change for better or for worse. Whether it is one or the other depends on whether we see clearly the problems and the possibilities in the change process and adopt intelligent attitudes and policies in regard to them. For change begets difficulties. Every social problem that we have has come into existence at some time or other as a product of change. The very processes which we have been describing, if their consequences are to be beneficial rather than detrimental, confront us with a multitude of social responsibilities as well as demands for individual orientation and adaptation. Let us survey a very few of the questions of social policy.

What about the distribution of wealth? Even without the confusion injected by increasing production we never are able to formulate any fundamental and exactly equitable allocation of individual shares. There are evidences that the general level of material well-being is rising as production becomes larger. But the adjustment occurs in a hit-or-miss fashion and often is achieved or prevented or abused by costly and painful class struggle. Increased production affords opportunities for higher physical, intellectual, and moral standards of living. How can we be sure to realize them? We also need to assure ourselves that what a person receives will be in some way commensurate with what he contributes and *vice versa*. But how? *

What can be done to protect and advance our welfare

* These problems are very thoroughly stated, but not solved, by Mr. R. H. Tawney in *The Acquisitive Society*.

as consumers of goods? The people of to-day, specialized and expert as they tend to be in their respective productive functions, are naïvely inexpert as buyers of goods for consumption. Dazed by psychologized salesmanship and hypnotized by seductive advertising, we become means for the end of selling goods instead of free agents whose wants are the ends which goods are to serve. That consumers are blindly wandering in wonderland has been ably demonstrated recently in several interesting studies.⁷ Yet the important point to it all is that this is not an independent or spontaneous condition. It is rather a symptom of the very processes we have been studying. Professor Veblen's picture of the business man who, in his greed, is holding back goods and services from a needy populace is not a recognizable likeness of the modern industrialist. If we forget the picture and look at the man himself, we find a very serious and reasonably benevolent person who is doing his best to cram more goods and more services down the collective throat of a more or less indifferent populace. His code of morals does not contain any element of "the public be damned." He desires rather that the public be pleased. This desire is sincere and genuine, not so much because he fears that legislative action may be taken against him, as for the positive reason that he wants to carry on the assets side of his balance sheet an imposing and revenue-bearing item of "good will."⁸ It is strange that we should need

⁷ Especially valuable for the light they throw on this phase of contemporary economic life are the studies by Stuart Chase and F. J. Schlinck, *Your Money's Worth* (Macmillan, 1927) and by Ralph Borsodi, *The Distribution Age* (Appleton, 1927), both of which works suggest means which, in the opinion of their authors, may be used to improve the situation. Another study, that by Henry Harrap, *The Education of the Consumer* (Macmillan, 1924), is a very interesting proposal of a curricular solution of the difficulty.

⁸ The writer has never found a clearer cut presentation of this attitude than one which arose during a conversation he once had with a man who is directing head of a nationally important industrial corporation.

to defend ourselves against such designs as these. But we do. In an ultimate sense we probably would be better off if some of the commodities and services which are urged upon us—and which we buy—never had been created. We spend much of our substance upon things which are less good for us instead of upon those which are better for us. And as long as our education is so largely derived from advertising sections and signboards and contacts with high-pressure salesmen, it is difficult for us to be discriminating. Can anything be done about it?

Another series of problems—distinctly different and yet corollary—arises out of the situation outlined in the preceding paragraph. They concern the social costs of merchandising functions. One student of the ways and means of marketing has measured the trend of costs involved in disposing of goods to buyers and found that it has almost trebled since 1870. He concludes that the cost of distributing goods and services, if it continues to rise at the same rate, will become so great by the end of the next fifty years that “more people will be engaged in the work of distribution—selling, advertising, delivering, transporting, etc.—than will be occupied in farming, stock raising, lumbering, mining and manufacturing.”⁹ It seems probable that a certain proportional reallocation of our resources may be necessary and desirable for the very reason that certain fields of economic endeavor appear to be improving more rapidly than others in

The matter under discussion was the trial of certain industrialists who were charged with having conducted their business in a fraudulent way. This gentleman said: “If they are guilty I hope the fact will be established before the court. And if they are found guilty I hope they will be assessed a heavy penalty. Such misconduct as they are charged with is not only despicable in itself; *it also undermines public confidence and so is bad for business.*” It is the writer’s own opinion that there can be no higher degree of business intelligence, integrity, and morality than this. The gentleman who expressed this attitude occupies a distinguished position among industrialists, and his opinions regarding such matters probably are typical of those of many of his colleagues.

⁹ Borsodi, Ralph, *loc. cit.*, page v.

organization and technology. And we may be inclined to quibble over the precise categories indicated above; e.g. over the question whether "delivering" and "transporting" are purely "distributive" functions or are, in large part, "productive" functions. Yet the issue cannot entirely be avoided. More and more energy is being diverted from the processes of actually making goods to the business of forcing the goods through a choking market to the ultimate buyers. In a differently ordered society, with a different scheme of rewards, many of our canvassers, advertising experts, and salespeople might be serving us as mechanics, inventors, scientists, philosophers, composers of songs and painters of pictures. Our present culture may be due, in large part, to the fact that Aristotle, Michelangelo, Newton, Watt, and others were not tempted with our modern commercial prospect of doing big things in a big way. These tendencies include, among other things, the outside arrangements and relations of the manufacturing industries whose organization and inside workings we have studied. They might be checked somewhat by the application to the market of techniques comparable to those of manufacturing. That such techniques are being applied in some directions—for the good and sufficient reason that it pays so to apply them—is seen in the expansion of the cash-and-carry principle and in the growth of mail-order houses and factory-to-consumer selling. These developments may not be powerful enough, however, to offset the general trend. Hence the situation remains an insistent social problem.

Viewed from yet another angle, the facts surveyed or implied in the foregoing discussion call into question our whole conception of what production is. It appears that many of the activities which we broadly classify as "productive" do not, in fact, constitute any net increase to

our output of want-satisfying goods and services. These constitute what we may call corrective activities, which are, many of them, necessary and useful. Yet it is our culture, rather than our unadulterated needs, which makes them so. The material conditions of our civilization give rise to needs and so other material conditions must be established for the sole purpose of catering to the needs thus created. Let us suppose that a physician inoculates a person with a virulent disease germ and, having made the person ill, proceeds to treat his case and finally cures him. Every one would agree that, after the person became ill, the ministrations of the physician were entirely necessary and useful. Yet it would be rather absurd to regard the procedure as a net gain to the patient. This supposititious situation appears to be analogous to many realities in our social life. The metropolitan area of New York City offers many striking illustrations. The constantly increasing pressure of population forces the expenditure of hundreds of millions of dollars—representing mountains of materials, and man-hours of labor which total thousands of centuries—for subway construction. A vehicular tunnel beneath the Hudson River is completed at a cost of nearly fifty million dollars. Before it is ready for use there are proposals made that a dozen or more other tunnels be built. And these transit facilities are provided with full knowledge that, as a result of them, the areas affected will become even more congested and thus will require, after a time, more transit facilities. Subways and tunnels are the best solution we have for our transit problems. But it seems more accurate to regard them as “corrective activities” rather than as strict and primary “productive” ones. It is doubtful if any human want is subserved by subway rides as such, or even by traveling through the best ventilated tunnel in the world. The above illustra-

tions are typical of the corrective features of a great host of facilities and services with which we are familiar. A complete list of them would include much of the work done by lawyers, by economists, by investment advisers, by banks, and by the constantly growing array of experts in one line or another who are called upon to solve problems of cultural origin. Let us hasten to repeat that many of these facilities and services are useful and necessary. Yet there seems to be a considerable duplication if we include the results achieved by these functionaries in the inventory of wealth along with the products of those economic activities which the functionaries serve and facilitate. Looked at in this light it appears that a considerable part of our "production" consists of duplications on paper rather than of net increments to material welfare. They are elements the costs of which constitute a sort of social overhead.

May it not be desirable to realize a part of our material gains in the form of more leisure and a wider diffusion of leisure? Is not the desire for more time for one's own interests and one's own family and friends a basic human motive? As it becomes increasingly easy for a person to satisfy his physical needs it may become more important to him to cater to his nonmaterial wants than to go on working to make things in order that he may have things. In fact this very selection of more leisure rather than more goods appears to be taking place. Evidences exist in the rapidly increasing facilities of golf courses, seasonal resorts, amusement places of all kinds, and most of all in the greater use of automobiles for recreational purposes. These facilities are not used solely by the very rich, but are steadily entering the schemes of living of more and more people. Among wage earners the forty-hour week is a next step which already is partly taken. And the taking of it is no more unnatural or

irrational than was that of the forty-eight-hour week. Social responsibility enters with the question of how this greater leisure is to be used. Restriction and censorship are not enough. Modes of healthful entertainment (i.e., those whose results will not be morally, intellectually, or physically harmful) must be devised and the necessary facilities provided. Opportunity must exist for every individual to have a constructive interest or hobby or avocation or to develop whatever flair he may have for philosophy or science or the arts. Such opportunities will add incalculably to human happiness and make glorious our civilization. This is a challenge to the social order itself and cannot be met by private enterprise. The ancient Greeks and Romans recognized this fact and the means adopted by their governments to meet the situation are among the high lights of their respective cultures. There is a social responsibility for the results of leisure. And it is not a simple matter. Our institutions of higher learning might well install, along with their courses in labor problems, research seminars in the problems of leisure.

How can the changes in organization and modes of production be brought to a closer adjustment with the needs of all the people? In this study we have used the expression "social interest" as referring to the only economic concern that all people have in common—their interest in having goods and services. Yet people are widely differentiated, and to a certain extent classified, by interests which are peculiar to themselves and to their groups. In the preceding chapter we have found certain trends which point toward a greater homogeneity of interest. Such, for example, are the spread of industrial integration and the wider diffusion of ownership in industrial corporations. The achievements of these trends toward creating an all-embracing unity of interest

amount, however, to no more than what a chemist would call a trace. The very divergence of desires among individuals and groups renders difficult many projects of social control and renders the state impotent as an instrument for material improvement. Thus a consciousness is growing at present that protective tariff laws, while unquestionably beneficial to certain industrialists, are positively detrimental to some other members of the community. And farmers appear to have grounds for their complaint that the present method of administering Federal Reserve rediscount rates is disadvantageous to them. The government of France is able to comprehend a far-reaching social interest in laws favorable to agricultural peasants; that of England is concerned with problems which chiefly affect industrial operations. Yet because of the complex variety of its resources, and consequently of the economic interests of its citizens, it is extremely difficult for the government of the United States to pass a law or carry out an administrative program which will be universally beneficial or even universally innocuous. Because of the constitutional limitations of their functions, it also is difficult for the several states. Various divisions of our people are constantly in danger of being crucified on a cross of silver, or of copper, or of aluminum—to mention only a few of them. The result is a scramble on the part of the various interests to capture the government. Pressure groups strive for what they want and inhibit any far-reaching social control. In the same way they seek to secure all increments of gain for themselves and leave nothing for "society," broadly conceived.¹⁰ Thus it appears that there is no single society which can be identified by a homogeneous set of interests. What we have is rather a considerable

¹⁰ The means of achieving these ends, after they become embodied in law or custom, seem to constitute "vested interests" in Professor Veblen's meaning of the phrase.

number of societies with interests which are more or less different from each other. For all of these reasons the problem of how to secure a wide diffusion of benefits from the changes in organization and modes of production is a complicated one.

A host of vexing international complications are closely associated with the industrial changes which we have traced. The requirement of powerful business interests for private preserves free from poachers, backed by a nationalistic hue and cry from the mass of the people, causes protective tariffs to be used in ways which both immediately and ultimately restrict production. Retaliation becomes a more popular prescription than reciprocity. Finding that even quasi-exclusive privileges in the home market are not sufficient for their needs, men of business venture from the security of the national breastworks in search of other lucrative worlds to conquer by the peaceful modes of trade and investment. The name of the result of this harmless penetration and exploitation is a word which we hear frequently in these contemplative days of peace. It is imperialism. It is a condition sought by some, tolerated by many, dreaded by a few. Its history has been that, in the long run, it causes a net loss rather than a net gain in terms of goods and services. Protective tariffs and imperialism are specific ways in which the nations whose manufacturers are driven to produce large quantities of goods must become their champions before other nations. There is, almost inevitably, a restrictive repercussion which is harmful to production. In addition to the friction induced by the situation, the maintenance of competitive armies and navies is a gross charge and a net loss. And international war, an unintended but anticipated consequence, is the fastest and most thorough mode of waste that the mind of man has yet invented. Some kind

of concerted action is necessary. That it is not forthcoming is one of the best contemporary evidences that, in regard to abstract and impersonal affairs, our purse strings are more sensitive than our heart strings.

Can we keep warm our democratic faith in education as a means for keeping ourselves oriented and adjusted to the ever-changing social pattern? If so, then faith must be strong to prevail over reason. As regards our formal agencies for disseminating knowledge, our schools and colleges, they find it difficult to keep in step with all the processions which are marching past their doors. And even after the institutions themselves have gathered up the necessary facts and arrived at conclusions concerning them, there is a very limited market for their new products. Fashions in thought do not change as other things change. Pedagogical research has pretty thoroughly proved that people will learn only what they want or are willing to learn. The schools and colleges have hardly a fair chance in their markets because many leading citizens—the people who elect officials and contribute to endowments—want their sons to learn what they themselves learned a generation earlier. Or else they want them to be taught what they want them to be taught. The result is that the institutions which are doing most to get their students equipped for the actual civilization in which they must live are the ones which are least subject to outside interference. Our less formal modes of education offer no more promise than the schools. Newspapers and journals tend to become mere house-organs for their advertisers or for the special interest groups which support them. A person seeking enlightenment must read the several sides of a case as presented by the different advocates. Then he may know vaguely that the truth lies somewhere in the middle ground. We deplore the lack of political and intellectual leaders to

guide us out of the wilderness of conflicting ideas in which we wander. But the fact seems to be that we would not be willing to follow leaders even if we had them. A Lenin or a Mussolini may be the bellwether of a single compact group, but the mass of the people affected are driven rather than led by their dictatorships. Ideas concerning new and real conditions, unless they happen also to be conventional, or not to be conventional, are anathema to many. Hence in the non-material realm of thought and opinion, there are restrictions to production comparable to those which apply to physical goods and services.

The above catalogue of insistent problems is not offered because the conditions are novel. They have, most of them, reached a fair age and maturity, and have been thought about and talked about a great deal. Neither is the list presented as a complete inventory of problems. It is intended to be suggestive rather than exhaustive. Nor is it meant as a mere outburst of cynical pessimism. It is thought that solutions and remedies come only after a serious facing of the situation. Some of these problems can and will be solved. Others, in the fullness of time, will be displaced and succeeded by new ones. On the palimpsest of social circumstance the moving finger, having writ and moved on, will return and erase and write again. There is little that is novel or ultimate or hopeless about the particular problems we have indicated. Their importance to the present study is that each of them results from, or is intensified by, or reacts upon, the very industrial changes which we have examined. And each of them is a phase of restricted production.

It is our purpose merely to indicate what the above problems are and to show their relationship to the specific theme advanced in this study—not to solve the problems themselves. In fact we do not know any final and all-

embracing solutions for them. Some of them appear to require collective action; others must be faced by each individual for himself. Where social control is invoked the way is made difficult by the usual obstacles. It seems clear, for example, that the national government might, if it could and would, remove some of the friction which retards production by participation directly in industry in ways similar to those practiced by the German State. But, we ask ourselves, could it and would it? We do not know; and suspicion would give us pause even if special interests did not. Other impediments exist in the case of proposals for non-political social control. Consumers' coöperation probably is the most promising of these. Yet its most ardent protagonists tend to be dismayed by the enormous power of the intrenched opposition which must be displaced *pari passu* with the growth of consumers' coöperation. The other, narrower, instruments of social control—the various associations, leagues, federations, and unions—are group organizations designed to promote group ends. If they do more than that it is a by-product and incidental to the major objective. Professor Clark, however, has projected a plan which would bring these pressure groups together and make them a coördinate part of the government.¹¹ The idea merits the attention of those interested in ways and means of control.

The host of contemporary non-conformities between social and individual interests in production are conclusive evidences that the economic anomaly is with us still. To some extent or other it will continue to be with us as long as our chief economic institutions, private property and freedom of enterprise, are maintained. The very fact that the exchange values of goods and services

¹¹ Clark, J. M., *Social Control of Business* (University of Chicago Press, 1926), pages 170-189, 461-473.

are derived from scarcity is enough to cause the condition to persist. A striking paradox arises from the thoroughly orthodox theory of value. It is stated that wealth consists of a stock or store of valuable things. It is further stated that the scarcer a thing is the more valuable it is. From which we may conclude that a smaller stock or store of valuable things may constitute greater aggregate wealth than a larger one. It not only may; it often does. Professor Moore, in a carefully thought out inductive study, shows by his statistics that one class of producers (i.e. growers of cotton) would be better off in some years if they could destroy a fourth or a third of their total product.¹² The recent efforts of the government of Cuba to restrict the sugar output is another case involving the same principle. The paradoxical situation leads us to wonder which is the more important, goods themselves, or the power of one kind of commodity or service to exchange for another kind. The answer is not far to seek; to an all-embracing society the goods themselves are more important; to each individual the power in exchange of whatever he has to sell is more important. There can be no complete correspondence.

Our material culture is generating both drives which make for larger production and frictions which impede production. In terms of the economic anomaly it is not possible to say how powerful are the drives and the frictions which are being generated to-day—or how much stronger or weaker they are to-day than they have been in times past. Nor have we attempted to make any such statement. The multitude and complexity of the tendencies and counter-tendencies inhibit so precise an assertion. In this study we have only sought to demonstrate that, as time goes on, it is becoming increasingly necessary, in

¹² Moore, H. L., *Forecasting the Yield and the Price of Cotton* (Macmillan, 1917).

manufacturing industries, to make goods in order to make money. More than that we cannot say. Even if it were possible to identify and to measure all of the elements which induce larger production and all of those which restrict production and to compare them in a way which would show one set of tendencies to be more powerful than the other, a careful statement of the result would require that all of the exceptions be stated. Otherwise the generalization would cover and obscure a great many non-conforming facts and a great many subsidiary but important conclusions. As a statistician might phrase it, the probable error would be so great as to render useless the statement of normality which had been derived. This, in fact, is the only fault we have to find with the generalizations of Adam Smith and Professor Veblen.

The description of processes outlined in this study is only that, and not a report of Progress. Whether the changes are for good or ill depends on the uses we make of them. Beyond the point of satisfying basic needs, there is little essential correspondence between wealth and welfare. Many economic discussions are criticized adversely on the ground that they confuse the one with the other. Because of the fidelity with which they adhere to objective criteria, they appear to lay heavy emphasis on the sheer brute facts of material goods. Indeed, it would require no great exercise of the imagination to infer from certain of their findings and the attendant implications an entire series of platitudes which would differ in no great degree from those of Poor Richard. Hence it sometimes appears that the mores of the industrial Middle Ages still operate among us and that our besetting passion is for "production—at any cost." A glorification of production, intentional or not, may cast a shadow over other equally important human interests. If man is condemned to eat bread in the sweat of his

face it is not enough merely to give him more bread; it also must be better bread and there must be opportunity for a keener appreciation of it.

The needs and motives and ambitions and aspirations of human beings are too subtle to be expressed in terms of groceries, five-room flats, and motor cars. Merely to demonstrate a process of partial resolution of the economic anomaly does not, in itself, extend any promise of greater ultimate happiness. Yet it extends potentialities whose future rests, for better or for worse, in our own hands. The writer of a recent novel causes his hero to set out upon his travels "in search of he knew not what." Which leads us to wonder how he will recognize that which he seeks, even if he finds it. Then we perceive in the enigmatical situation a characteristic of ourselves. We seldom know precisely what we want. So we may conclude that the single process of bringing about a higher degree of correspondence, in manufacturing industries, between our social interests in making goods and our individual interests in making money is not a key which will unlock the door to an untroubled state of economic affairs. And, taken alone, it never will be.

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